SONY

DIGITAL VIDEO SWITCHER

DVS-7200A

SWITCHER CONTROL PANEL

BKDS-7015
BKDS-7025/7026

BKDS-2031
BKDS-2032
BKDS-2041
BKDS-2070
BKDS-7001
BKDS-7002
BKDS-7030
BKDS-7031
BKDS-7033
BKDS-7075
BKDS-7090
BKDS-7091
BKDS-7103
BKDS-7110
BKDS-7111
BKDS-7113
BKDS-7133
BKDS-7161
BKDS-7163
BKDS-7250
BKDS-7270
BKDS-7271
BKDS-7280
BKDS-7340
BKDS-7420
BKDS-7445
BKDS-7690
BZS-7040A
BZS-7060A

MAINTENANCE MANUAL Part 1
1st Edition

⚠警告

このマニュアルは，サービス専用です。
お客様が，このマニュアルに記載された設置や保守，点検，修理など行うと感電や火災，人身事故につながることがあります。
危険をさけるため，サービストレーニングを受けた技術者のみご使用ください。

⚠WARNING

This manual is intended for qualified service personnel only.
To reduce the risk of electric shock, fire or injury, do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so. Refer all servicing to qualified service personnel.

⚠WARNUNG

Die Anleitung ist nur für qualifiziertes Fachpersonal bestimmt.
Alle Wartungsarbeiten dürfen nur von qualifiziertem Fachpersonal ausgeführt werden. Um die Gefahr eines elektrischen Schlages, Feuergefahr und Verletzungen zu vermeiden, sind bei Wartungsarbeiten strikt die Angaben in der Anleitung zu befolgen. Andere als die angegeben Wartungsarbeiten dürfen nur von Personen ausgeführt werden, die eine spezielle Befähigung dazu besitzen.

⚠AVERTISSEMENT

Ce manual est destiné uniquement aux personnes compétentes en charge de l’entretien. Afin de réduire les risques de décharge électrique, d’incendie ou de blessure n’effectuer que les réparations indiquées dans le mode d’emploi à moins d’être qualifié pour en effectuer d’autres. Pour toute réparation faire appel à une personne compétente uniquement.

DVS-7200A	Serial No. 10001 and Higher	BKDS-7161	Serial No. 10001 and Higher
BKDS-2031	Serial No. 10001 and Higher	BKDS-7163	Serial No. 10001 and Higher
BKDS-2032	Serial No. 10001 and Higher	BKDS-7250	Serial No. 10001 and Higher
BKDS-2041	Serial No. 10001 and Higher	BKDS-7270	Serial No. 10001 and Higher
BKDS-2070	Serial No. 10001 and Higher	BKDS-7271	Serial No. 10001 and Higher
BKDS-7001	Serial No. 10001 and Higher	BKDS-7280	Serial No. 10001 and Higher
BKDS-7002	Serial No. 10001 and Higher	BKDS-7340	Serial No. 10001 and Higher
BKDS-7015	Serial No. 10001 and Higher	BKDS-7420	Serial No. 10001 and Higher
BKDS-7025	Serial No. 10001 and Higher	BKDS-7445	Serial No. 10001 and Higher
BKDS-7026	Serial No. 10001 and Higher	BKDS-7690	Serial No. 10001 and Higher
BKDS-7030	Serial No. 10001 and Higher	BZS-7040A	Serial No. 10001 and Higher
BKDS-7031	Serial No. 10001 and Higher	BZS-7060A	Serial No. 10001 and Higher
BKDS-7033	Serial No. 10001 and Higher		
BKDS-7075	Serial No. 10001 and Higher		
BKDS-7090	Serial No. 10001 and Higher		
BKDS-7091	Serial No. 10001 and Higher		
BKDS-7103	Serial No. 10001 and Higher		
BKDS-7110	Serial No. 10001 and Higher		
BKDS-7111	Serial No. 10001 and Higher		
BKDS-7113	Serial No. 10001 and Higher		
BKDS-7133	Serial No. 10001 and Higher		

WARNING
This unit has no power switch.
When installing the unit, incorporate a readily accessible disconnect device in the fixed wiring, or connect the power cord to a socket-outlet which must be provided near the unit and easily accessible, so that the user can turn off the power in case a fault should occur.

WARNUNG
Dieses Gerät hat keinen Netzschalter.
Beim Einbau des Geräts ist daher im Festkabel ein leicht zugänglicher Unterbrecher einzufügen, oder das Netzkabel mu*ß* mit einer in der Nähe des Geräts befindlichen, leicht zugänglichen Wandsteckdose verbunden werden, damit sich bei einer Funktionsstörung die Stromversorgung zum Gerät jederzeit unterbrechen lä*ß*t.

Attention-when the product is installed in Rack:

1. **Prevention against overloading of branch circuit**
   When this product is installed in a rack and is supplied power from an outlet on the rack, please make sure that the rack does not overload the supply circuit.

2. **Providing protective earth**
   When this product is installed in a rack and is supplied power from an outlet on the rack, please confirm that the outlet is provided with a suitable protective earth connection.

3. **Internal air ambient temperature of the rack**
   When this product is installed in a rack, please make sure that the internal air ambient temperature of the rack is within the specified limit of this product.

4. **Prevention against achieving hazardous condition due to uneven mechanical loading**
   When this product is installed in a rack, please make sure that the rack does not achieve hazardous condition due to uneven mechanical loading.

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Manual Structure

Purpose of this manual

This manual is the maintenance manual part 1 of Digital Video Switcher DVS-7200A. This manual is intended for use by trained system and service engineers, and describes the information for general service and periodic maintenance with the intention of servicing including the replacement of the principal blocks and mounted circuit boards.

Related manuals

The following manuals are prepared for DVS-7200A.
The part numbers of these manuals as of February, 1999 describe.

- **User's Guide (Supplied with BZS-7040A or 7060A)**
  This manual describes the application and operation of DVS-7200A.

- **Operation Manual (Supplied with DVS-7200A)**
  This manual describes the overview, system configuration examples and specifications.

- **Installation Manual (Supplied with DVS-7200A)**
  This manual describes the information when installing DVS-7200A.
  Part number : 3-201-868-01

- **Maintenance Manual Part 2**

  The following manuals describe the detailed service information. For obtaining, please contact your local Sony's sale/service office.

  Volume 1 (Block diagrams and Frame wirings)
  Part number : 9-967-615-03
  Supplement 4 Part number : 9-967-615-84

  Volume 2
  (Spare parts, Service overview and Replacement of main parts)
  Part number : 9-967-616-03
  Supplement 5 Part number : 9-967-616-85

  Volume 3 (Semiconductor pin assignments)
  Part number : 9-967-617-03
  Supplement 3 Part number : 9-967-617-83

  Volume 4 (Board layouts)
  Part number : 9-967-618-03
  Supplement 4 Part number : 9-967-618-84

- **Maintenance Manual Part 2**
  Volume 5 (Schematic diagrams 1 A through I)
  Part number : 9-967-624-03
  Supplement 3 Part number : 9-967-624-83

  Volume 6 (Schematic diagrams 2 K through Z)
  Part number : 9-967-625-02
  Supplement 4 Part number : 9-967-625-84

Contents

This manual is organized by following sections.

Section 1 Service Overview

For DVS-7200A, this section describes the removal and installation of front panel, location of main parts, inserting/pulling out of plug-in boards, capacitor for data backup, and spare parts.
For control panel, this section describes the opening and closing of panel, removal of exterior parts, location of main parts, installation and removal of boards, replacement of backup memory IC and spare parts.

Section 2 Replacement of Main Parts

For DVS-7200A and control panel, this section describes the main parts replacement.

Section 3 Troubleshooting (Control Panels)

This section describes the self diagnostics mode of the control panels.

Section 4 Periodic Check and Maintenance

This section describes the periodic check and maintenance.

Section 5 Overall Block Diagrams

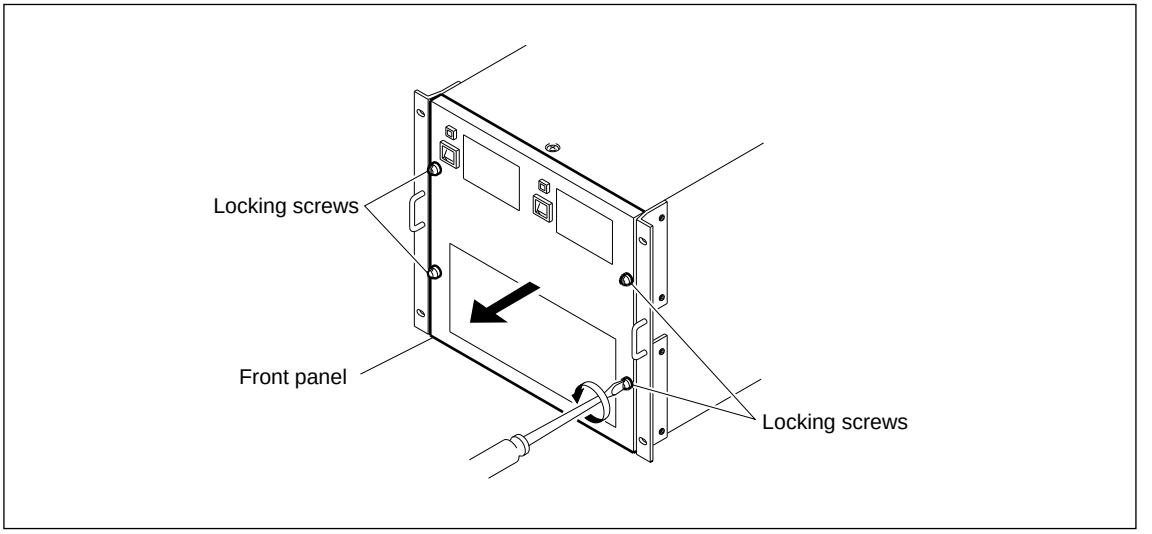
This section describes the overall block diagrams.

Section 1
Service Overview

1-1. DVS-7200A

1-1-1. Removal and Installation of Front Panel

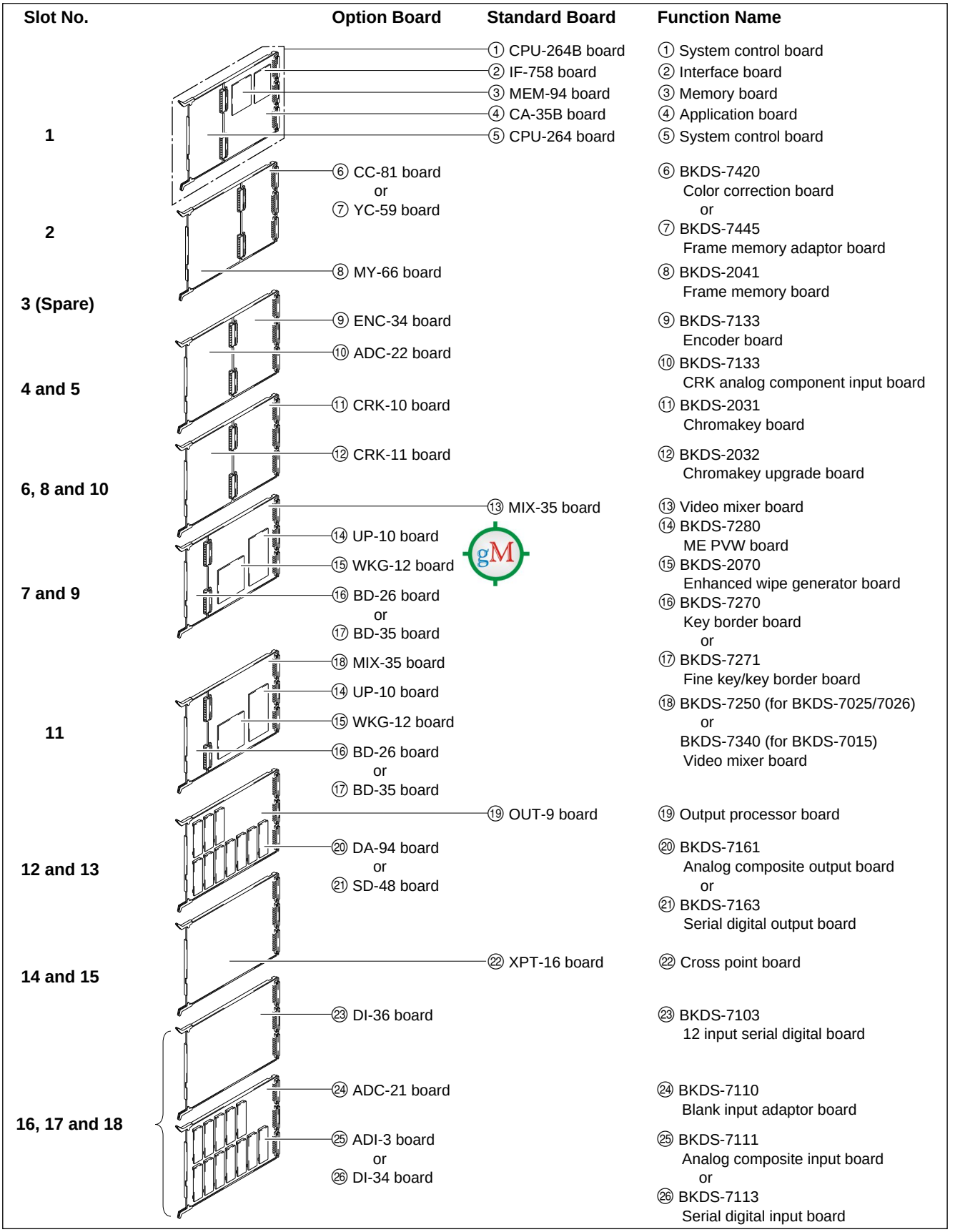
(1) Loosen the four locking screws on the front panel using a flatblade screwdriver.
(2) Remove the front panel in the direction of the arrow.



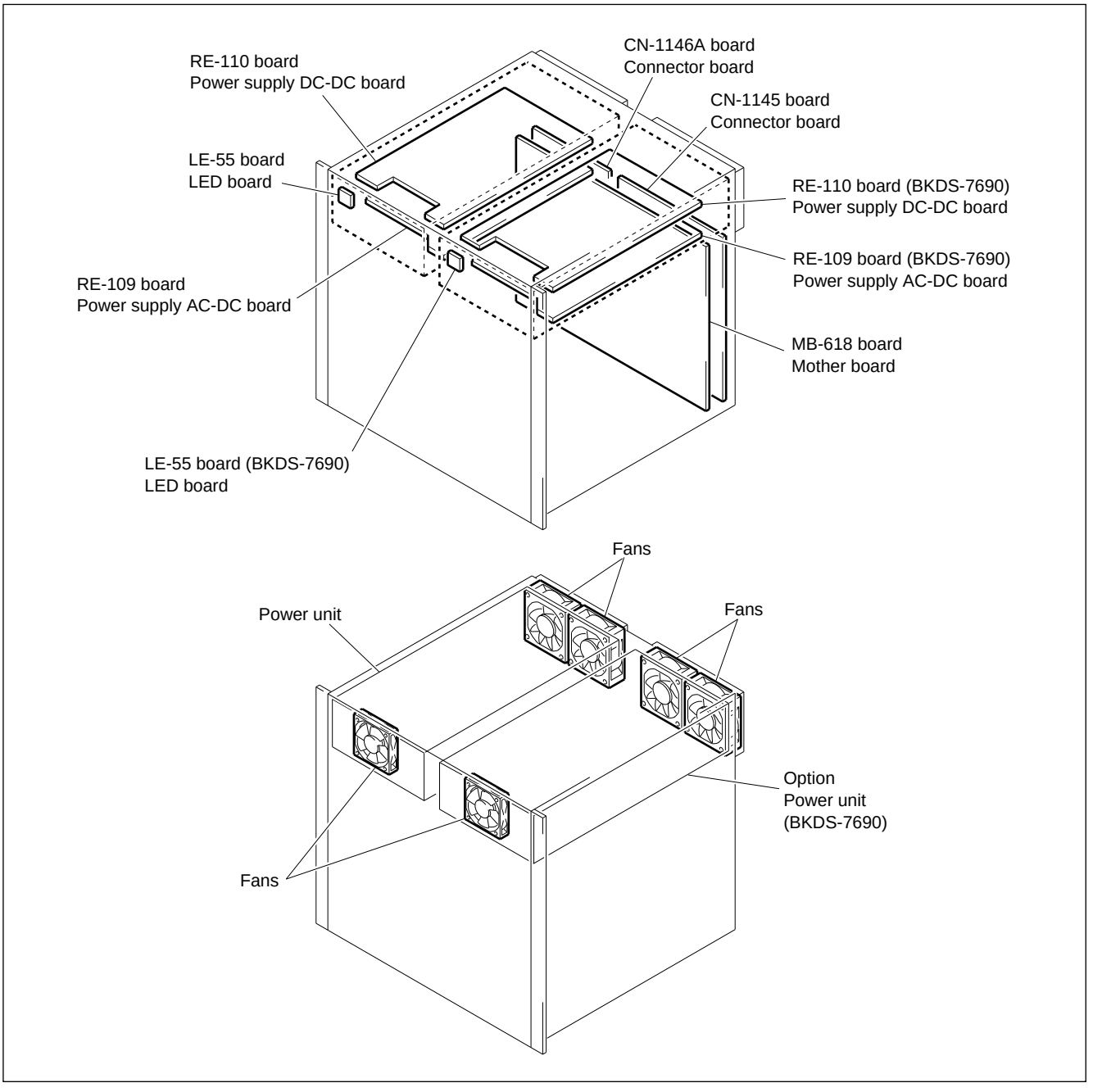
(3) Install the front panel in the reverse order of the procedures (1) and (2).

1-1-2. Location of Main Parts

1. Plug-in Boards



2. Except Plug-in Boards

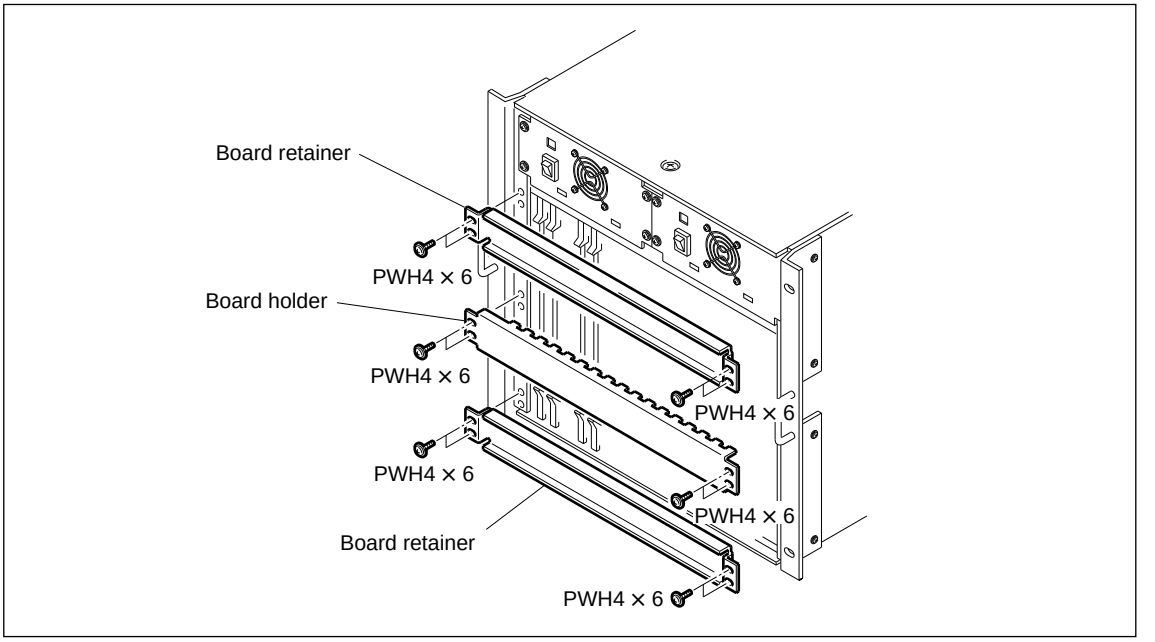


1-1-3. Inserting/Pulling Out of Plug-in Boards

CAUTION

To avoid shock hazards and/or damage to the plug-in boards, be sure to turn off the power switch before inserting or pulling out the plug-in boards.

(1) Remove the front panel. (Refer to the section 1-1-1.)
(2) Remove the 12 screws, the two board retainers and the one board holder.



Removal

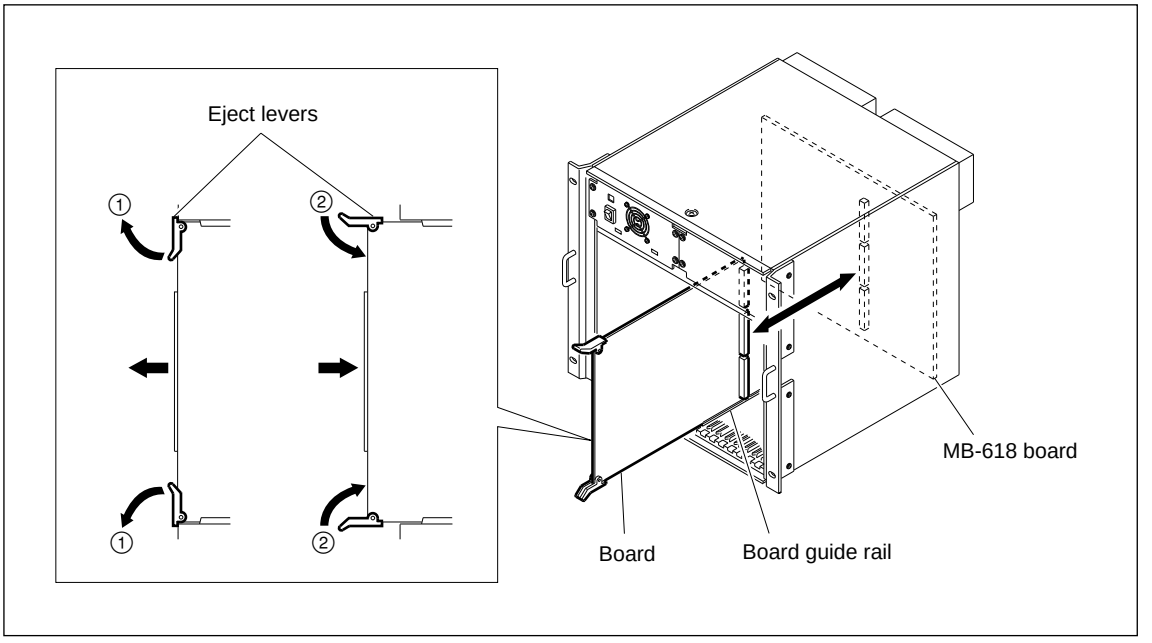
(3) Open the eject levers of the plug-in board in the direction of the arrows ①.
(4) Pull out the plug-in board from the unit.

Note

Pull out the plug-in board with an equal force for both eject levers.

Installation

(5) Insert the plug-in board along the board guide rails while opening the eject levers in the direction of the arrows ①.
(6) Connect the plug-in board to the connector on the mother board by putting the eject levers in the direction of the arrows ②.
(7) Install the two board retainer and the one board holder in the reverse order of the procedures (1) and (2).



1-1-4. Capacitor for Data Backup

To store a setup data and a real-time clock, the large storage capacitor (3 Farad) is mounted on the CPU-264B board.
To charge the large storage capacitor sufficiently, turn on the power of DVS-7200A for more than about thirty minutes. The sufficiently charged large storage capacitor enables data to be stored for about one week in the normal temperature.

1-1-5. Spare Parts

This section describes the information for spare parts. In case of ordering replaceable parts such as mounted circuit boards and major components, refer to the part numbers and descriptions that are listed in this section.

Spare Parts

Description	Part No.
Mounted Circuit Board, ADC-22 (BKDS-7133)	A-8269-630-A
Mounted Circuit Board, CN-1145	A-8269-605-A
Mounted Circuit Board, CN-1146A	A-8321-833-A
Mounted Circuit Board, CPU-264B (Including with CA-35B, IF-758 and MEM-94 Boards)	A-8321-034-A
Mounted Circuit Board, ENC-34 (BKDS-7133)	A-8269-628-A
Mounted Circuit Board, MB-618	A-8269-604-A
Mounted Circuit Board, MIX-35 (BKDS-7250/7340)	A-8269-632-A
Mounted Circuit Board, OUT-9	A-8269-612-A
Mounted Circuit Board, RE-109	A-8269-598-A
Mounted Circuit Board, RE-110	A-8269-600-A
Mounted Circuit Board, XPT-16	A-8321-301-A
Printed Circuit Board, LE-55	1-620-338-11
DC Fan Motor	1-698-080-11
BKDS-7103, DI-36	Option
BKDS-7110, ADC-21	Option
BKDS-7111, ADI-3	Option
BKDS-7113, DI-34	Option
BKDS-7161, DA-94	Option
BKDS-7163, SD-48	Option
BKDS-7270, BD-26	Option
BKDS-7271, BD-35	Option
BKDS-7280, UP-10	Option
BKDS-7420, CC-81	Option
BKDS-7445, YC-59	Option
BKDS-2031, CRK-10	Option
BKDS-2032, CRK-11	Option
BKDS-2041, MY-66	Option
BKDS-2070, WKG-12	Option
BKDS-7690, Redundant Power Supply Unit	Option

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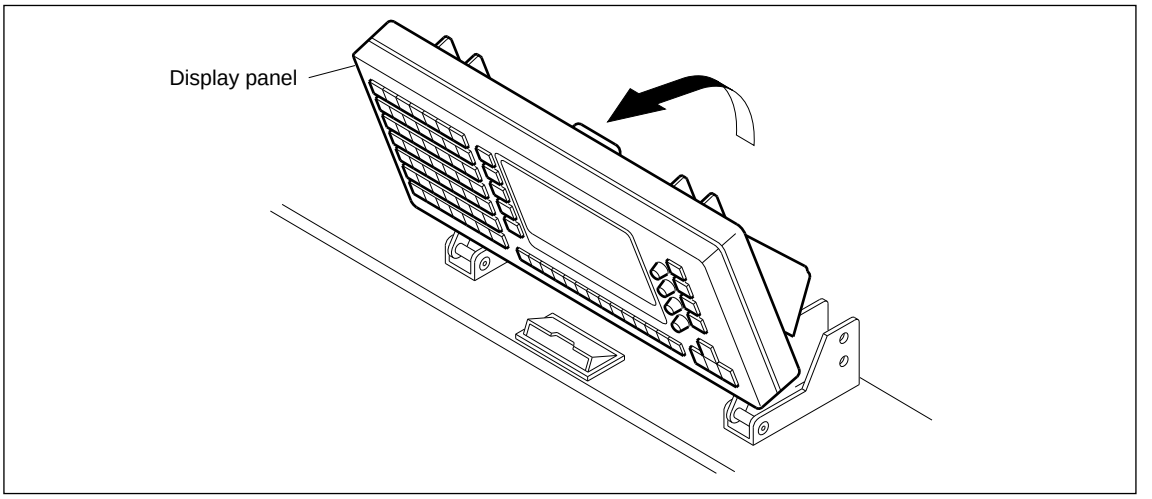
1-2. Control Panel

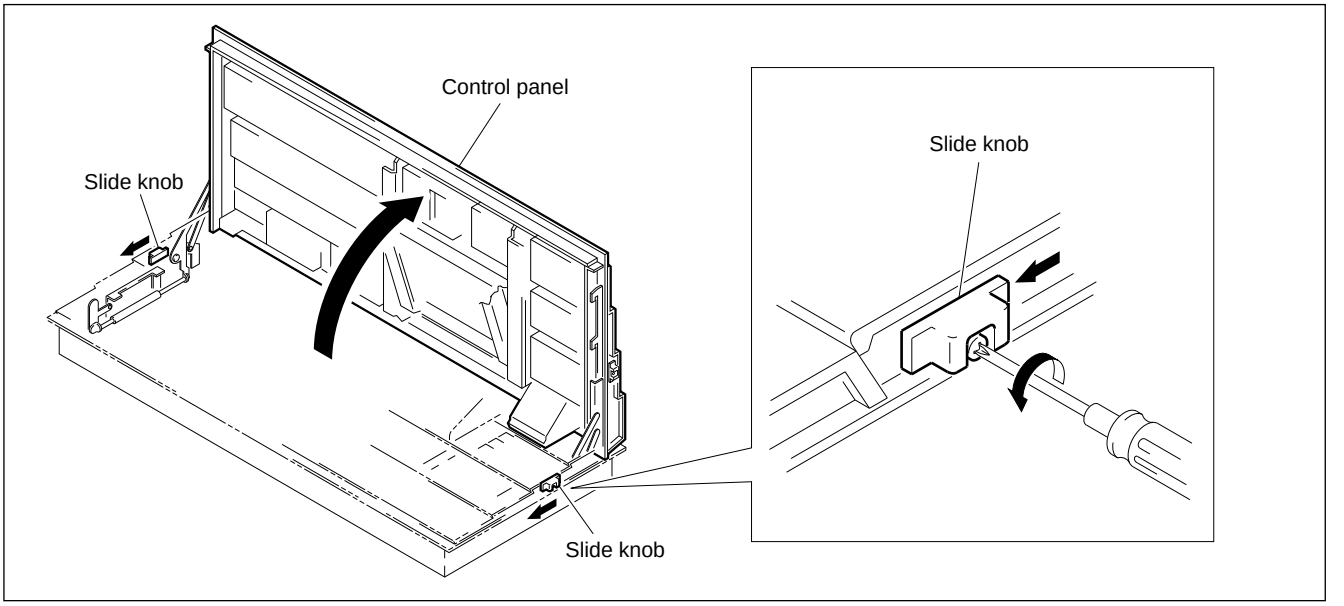
1-2-1. Opening and Closing of Panel

Note

When opening and closing the panels of BKDS-7025 and 7026, tilt the display panel forward.
If not, the display panel is touched against the unit with placed at the back.



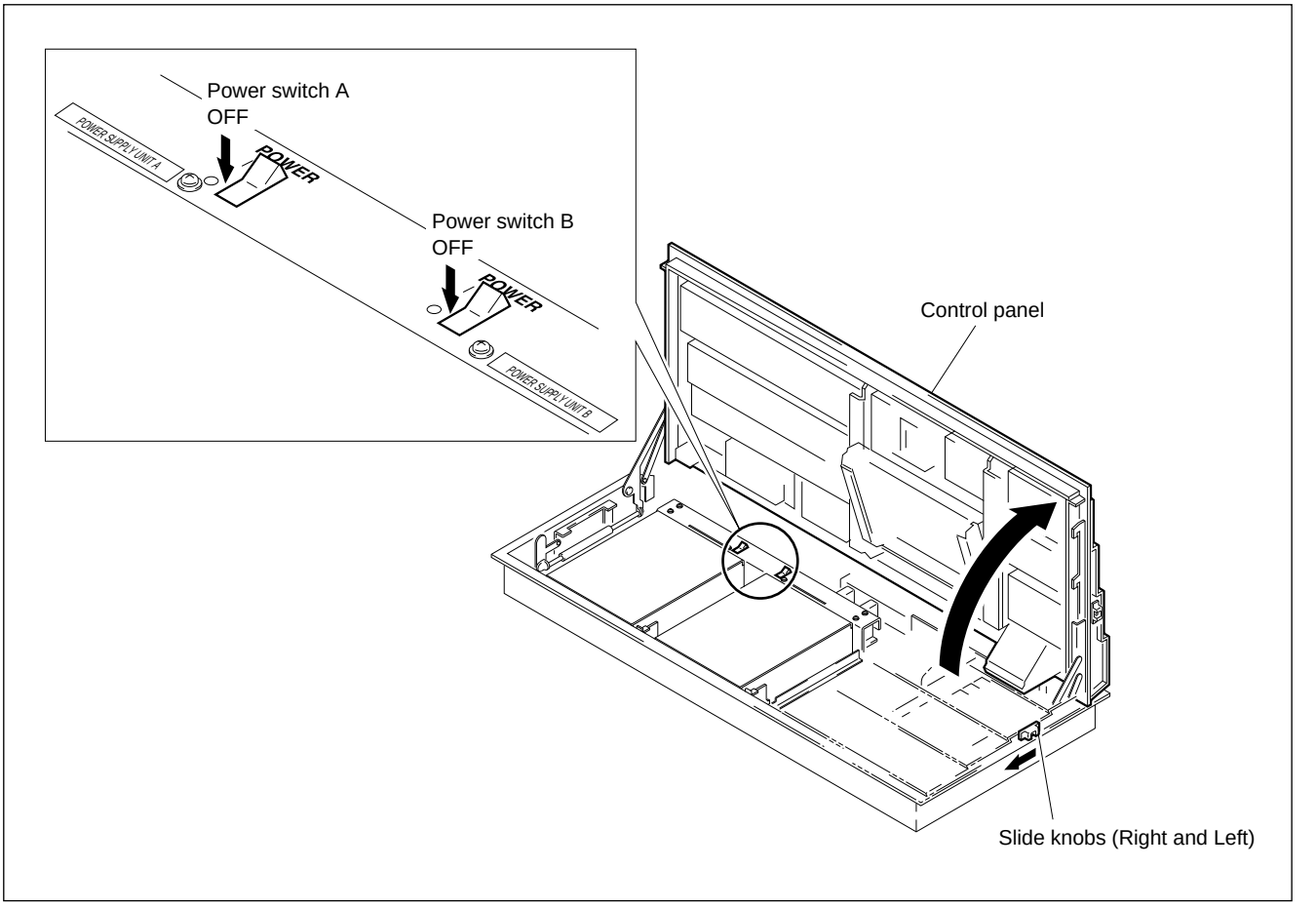
(1) Loosen the screws of the slide knobs at both sides of the panel.
(2) Move the slide knobs forward and release the locks.
(3) Push up the panel and open it.



(4) Push down the panel until the slide knobs are locked, and close it.
(5) Tighten the screws of the slide knobs at both sides of the panel.

1-2-2. Turning On/Off the Power Switch

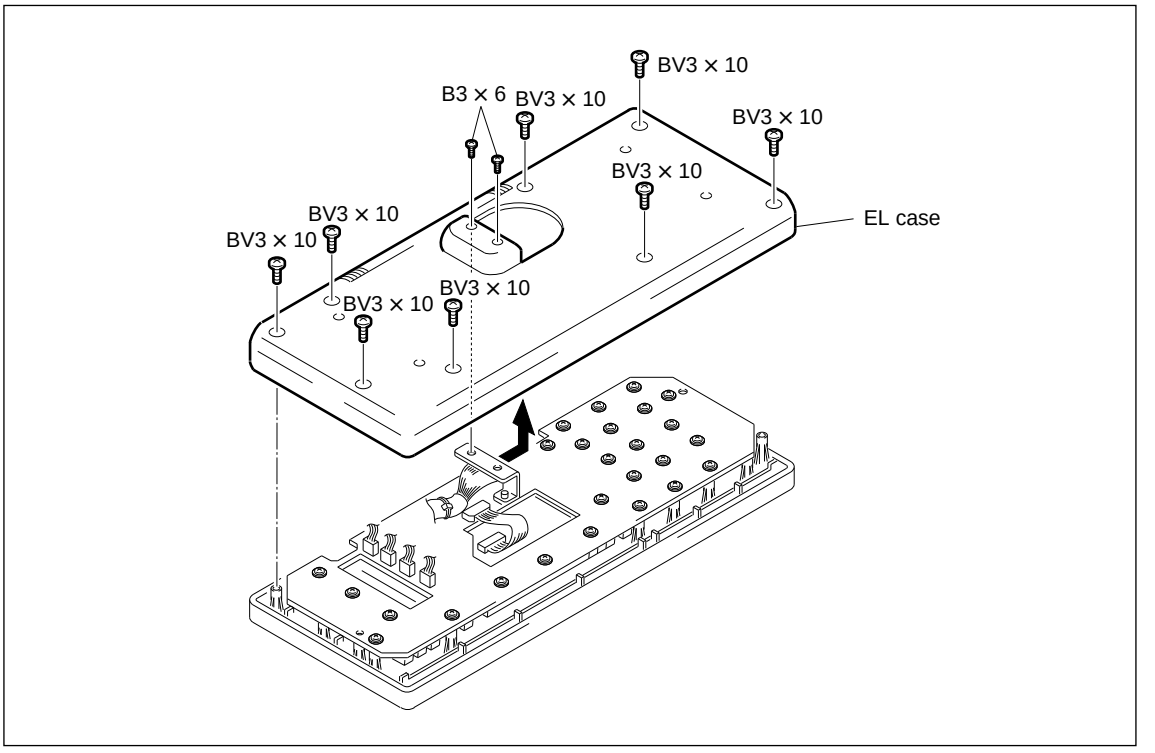
(1) Open the panel of the control panel. (Refer to “1-2-1. Opening and Closing of panel”.)
(2) Turn off the power switches A and B in the control panel.



1-2-3. Removal of Exterior Parts

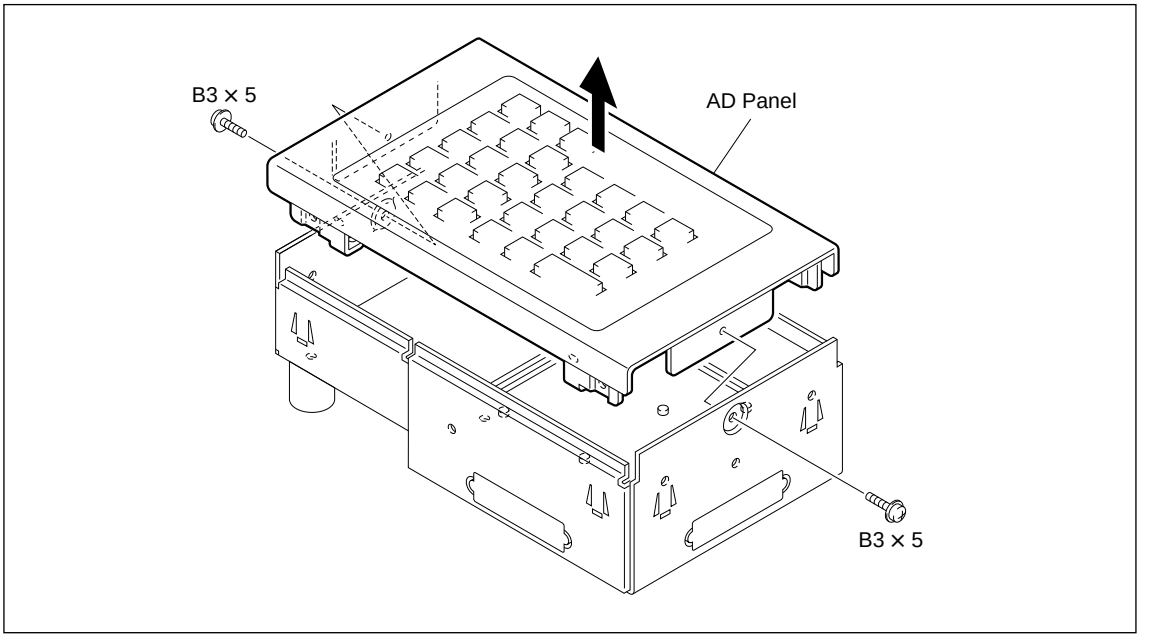
1. Display Panel (BKDS-7025/7026)

(1) Remove the 10 screws shown in the figure.
(2) Lift up the EL case in the direction of the arrow and remove it.



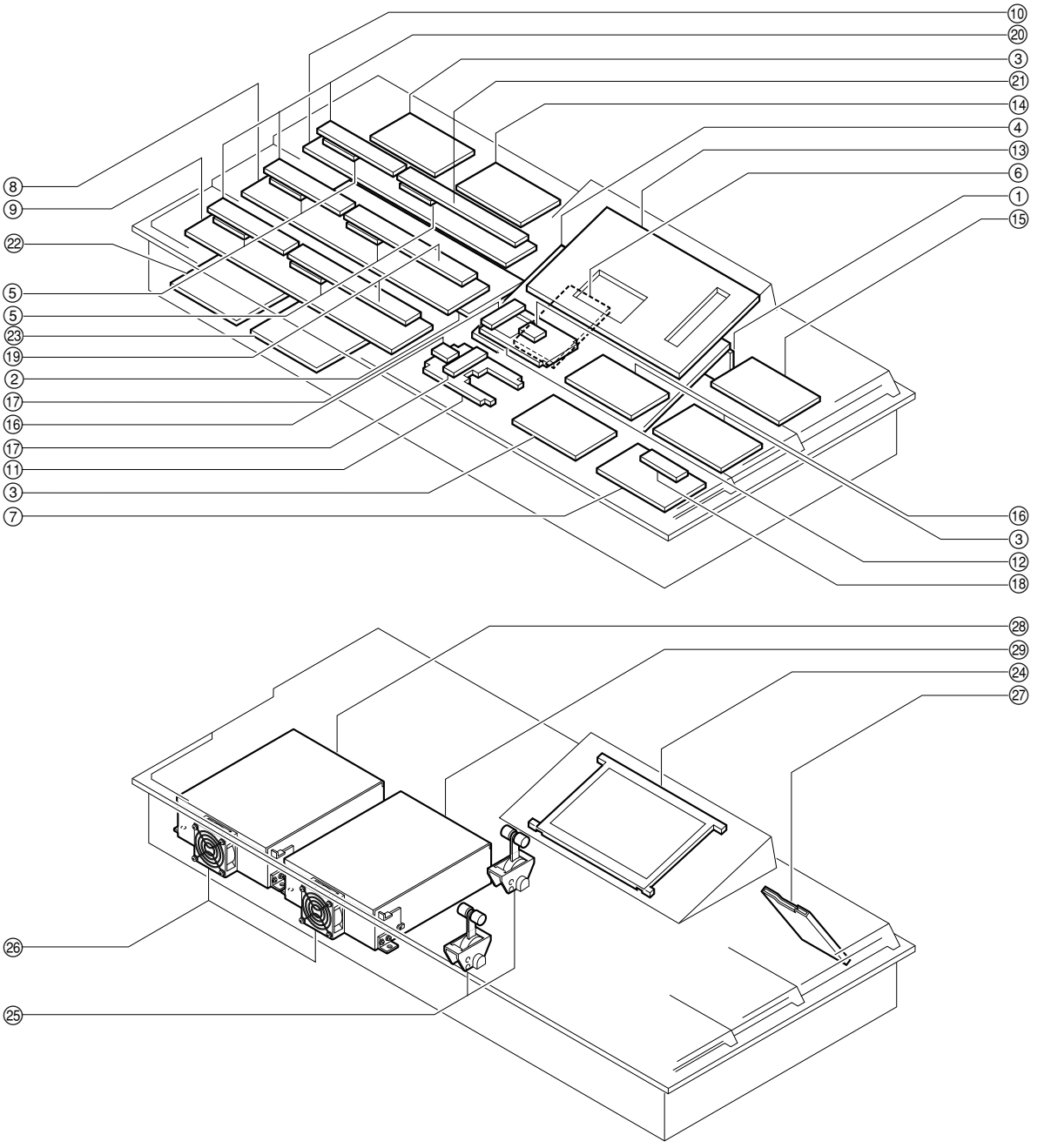
2. Adaptor Box (BKDS-7075)

(1) Remove the two screws shown in the figure.
(2) Lift up the AD panel in the direction of the arrow and remove it.



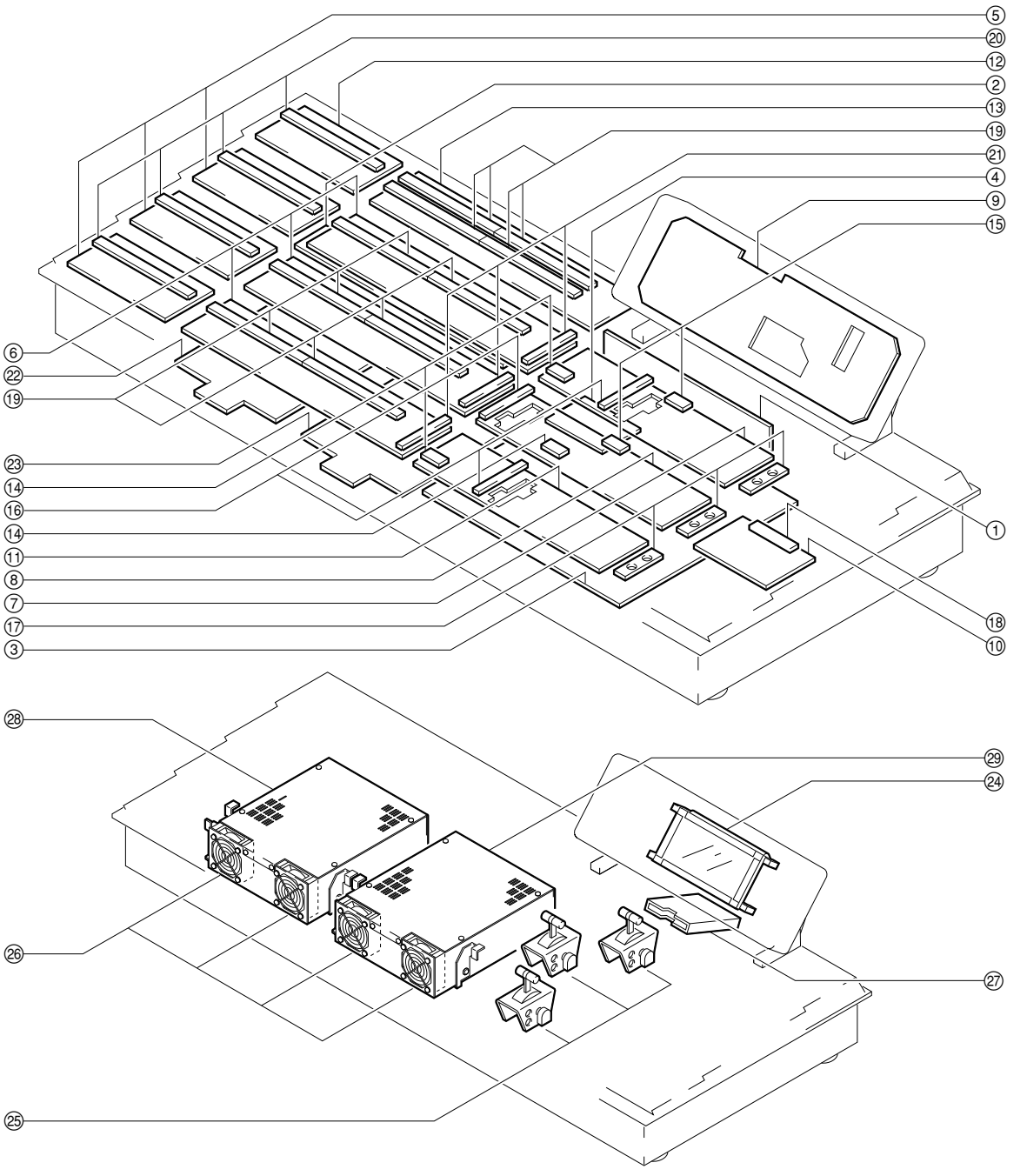
1-2-4. Location of Main Parts

BKDS-7015



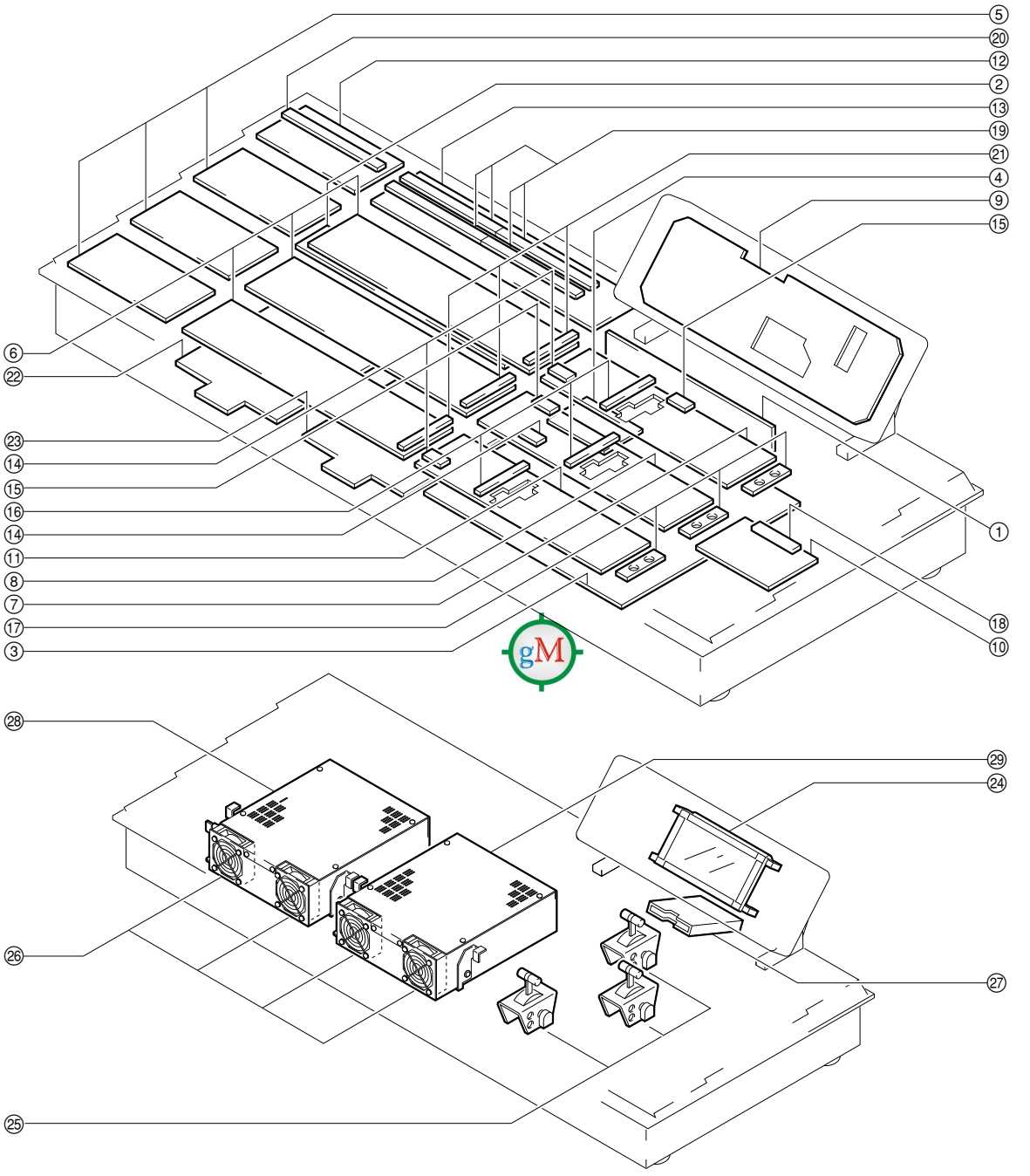
① CN-1149 board
② CN-1150 board
③ CN-1509 board
④ CPU-246 board
⑤ DC-92 board (BKDS-7002)
⑥ IF-523 board (BKDS-7001)
⑦ KY-324 board
⑧ KY-389A board
⑨ KY-389B board
⑩ KY-390 board
⑪ KY-391 board
⑫ KY-392 board
⑬ KY-394 board
⑭ KY-395A board
⑮ KY-395B board
⑯ LE-142 board
⑰ LE-144 board
⑱ LE-146 board
⑲ LE-147 board (BKDS-7002)
⑳ LE-148 board (BKDS-7002)
㉑ LE-180 board (BKDS-7002)
㉒ RE-146 board
㉓ RE-146 board (BKDS-7091)
㉔ EL display
㉕ Fader
㉖ Fan
㉗ FDD (Floppy disk drive) unit
㉘ Power unit
㉙ Option Power unit (BKDS-7091)

BKDS-7025



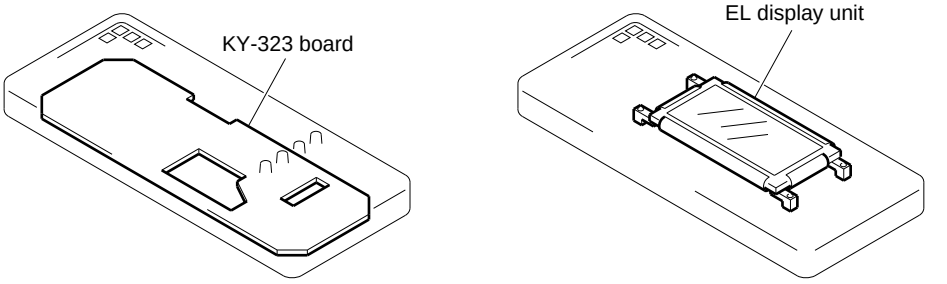
① CN-1143B board
② CN-1148 board
③ CPU-263 board
④ IF-523 board (BKDS-7001)
⑤ KY-318A board
⑥ KY-319A board
⑦ KY-320 board
⑧ KY-321 board
⑨ KY-323 board
⑩ KY-324 board
⑪ KY-411 board
⑫ KY-331 board
⑬ KY-332 board
⑭ LE-142 board
⑮ LE-143 board
⑯ LE-144 board
⑰ LE-145 board
⑱ LE-146 board
⑲ LE-147 board
⑳ LE-148 board
㉑ LE-150 board
㉒ RE-112 board
㉓ RE-112 board (BKDS-7090)
㉔ EL display
㉕ Fader
㉖ Fan
㉗ FDD (Floppy disk drive) unit
㉘ Power unit
㉙ Option Power unit (BKDS-7090)

BKDS-7026

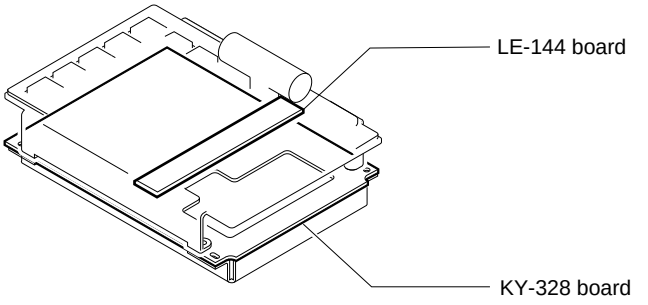


① CN-1143B board
② CN-1148 board
③ CPU-263 board
④ IF-523 board (BKDS-7001)
⑤ KY-318B board
⑥ KY-319B board
⑦ KY-320 board
⑧ KY-367 board
⑨ KY-323 board
⑩ KY-324 board
⑪ KY-411 board
⑫ KY-331 board
⑬ KY-332 board
⑭ LE-142 board
⑮ LE-143 board
⑯ LE-144 board
⑰ LE-145 board
⑱ LE-146 board
⑲ LE-147 board
⑳ LE-148 board
㉑ LE-150 board
㉒ RE-112 board
㉓ RE-112 board (BKDS-7090)
㉔ EL display
㉕ Fader
㉖ Fan
㉗ FDD (Floppy disk drive) unit
㉘ Power unit
㉙ Option Power unit (BKDS-7090)

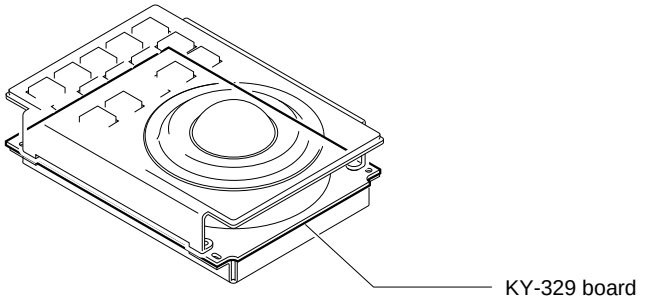
Display panel
BKDS-7025/7026



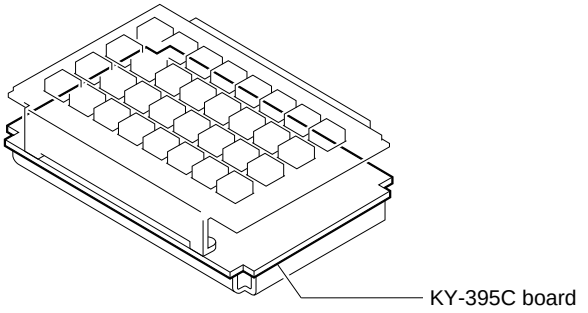
BKDS-7030



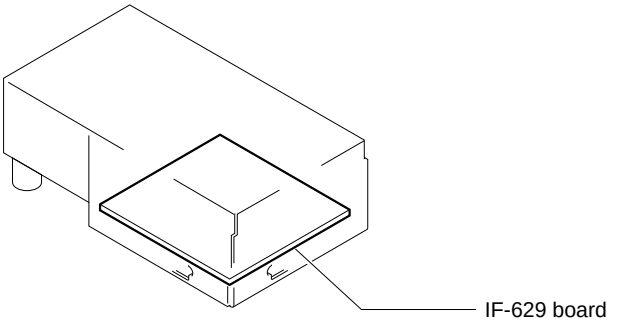
BKDS-7031



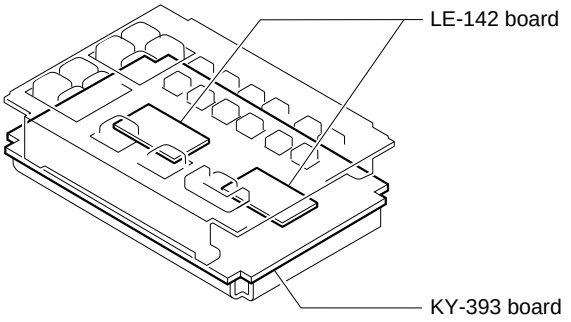
BKDS-7033



BKDS-7075



BKDS-7340



1-2-5. Installation and Removal of Boards

CAUTION

To avoid shock hazards and/or damage to the mounted circuit boards, be sure to turn off the breaker at the outside of the control panel or unplug the power cord before installing and/or removing the mounted circuit boards.

Removal of Retainers

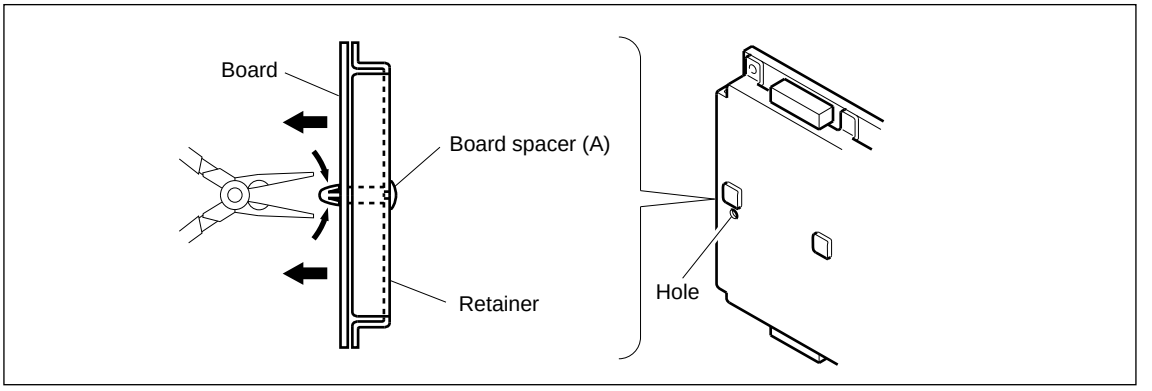
The retainers are installed to the following boards.

- KY-318A and 318B Boards
- KY-319A and 319B Boards
- KY-320 Board
- KY-321 Board
- KY-324 Board
- KY-328 Board (BKDS-7030)
- KY-329 Board (BKDS-7031)
- KY-331 Board
- KY-332 Board
- KY-367 Board
- KY-389A and 389B Boards
- KY-390 Board
- KY-391 Board
- KY-392 Board
- KY-393 Board
- KY-394 Board
- KY-395A and 395B Boards
- KY-395C Board (BKDS-7033)
- KY-411 Board

(1) Remove the board installing with the retainer.
(2) Pinch the board spacers on the board using a pair of long-nose priers. Pull out the board while releasing the lock.

Note

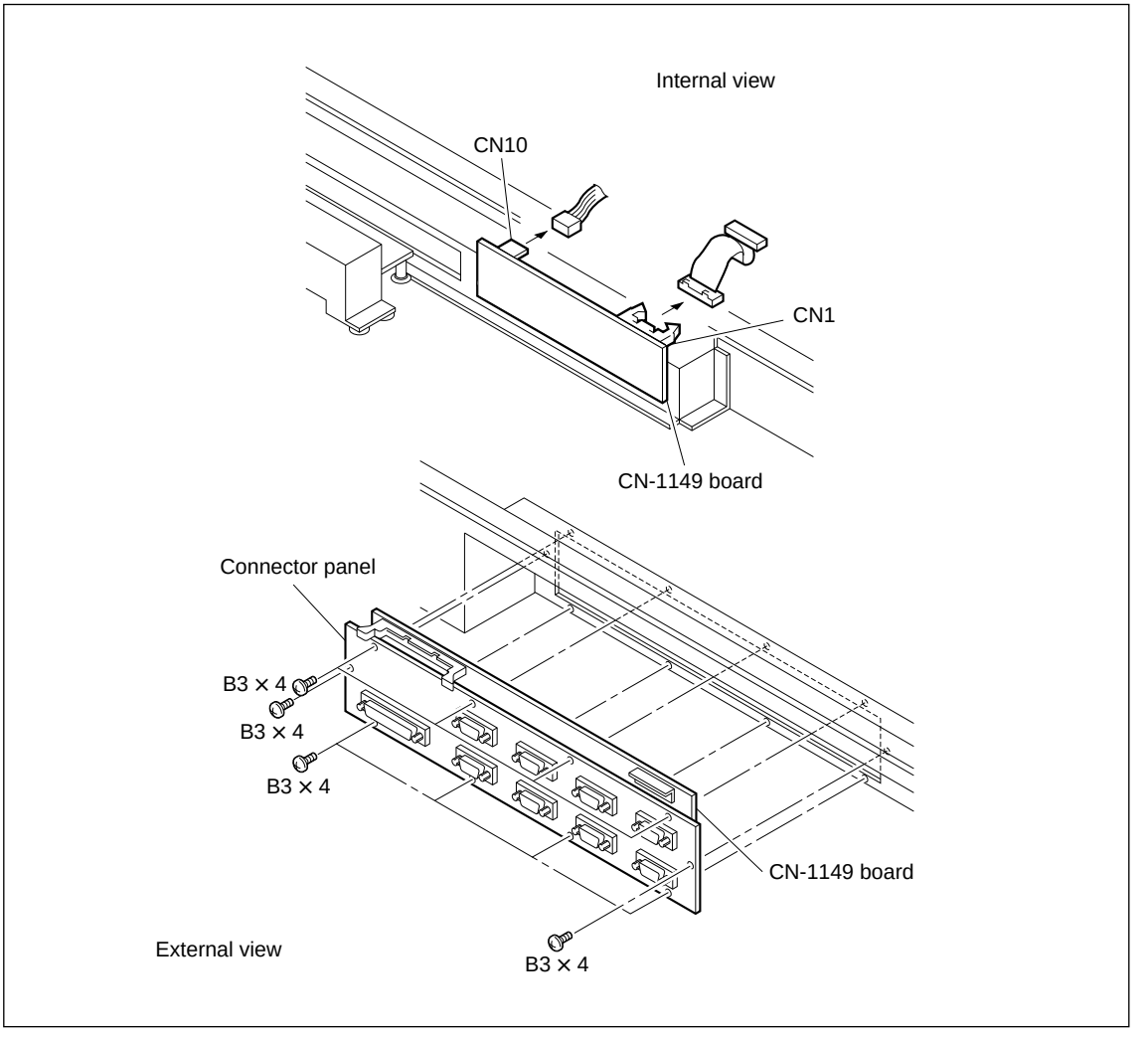
For the board spacer is necessary to release the lock, the small hole as a mark opens at the side of the board spacer onto the retainer.



Installation and Removal of Boards

1. CN-1149 Board (BKDS-7015)

(1) Open the panel. (Refer to the section 1-2-1.)
(2) Turn off the power switch in the control panel. (Refer to the section 1-2-2.)
(3) Disconnect the two connectors (CN1 and CN10).
(4) Remove the 10 screws on the connector panel.
(5) Remove the CN-1149 board installing with the connector panel.



(6) Install the CN-1149 board in the reverse order of the procedures (1) through (5).

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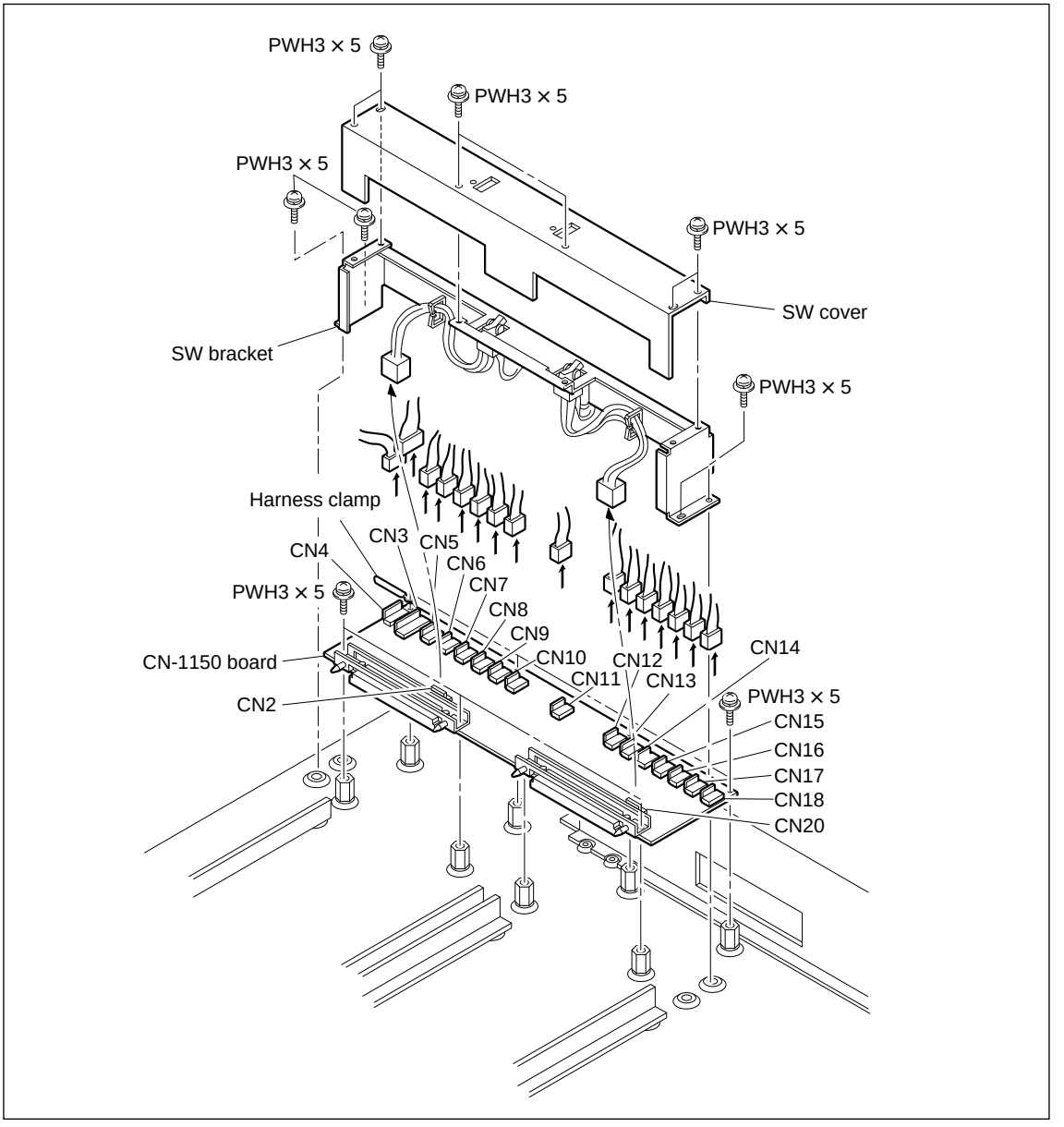
2. CN-1150 Board (BKDS-7015)

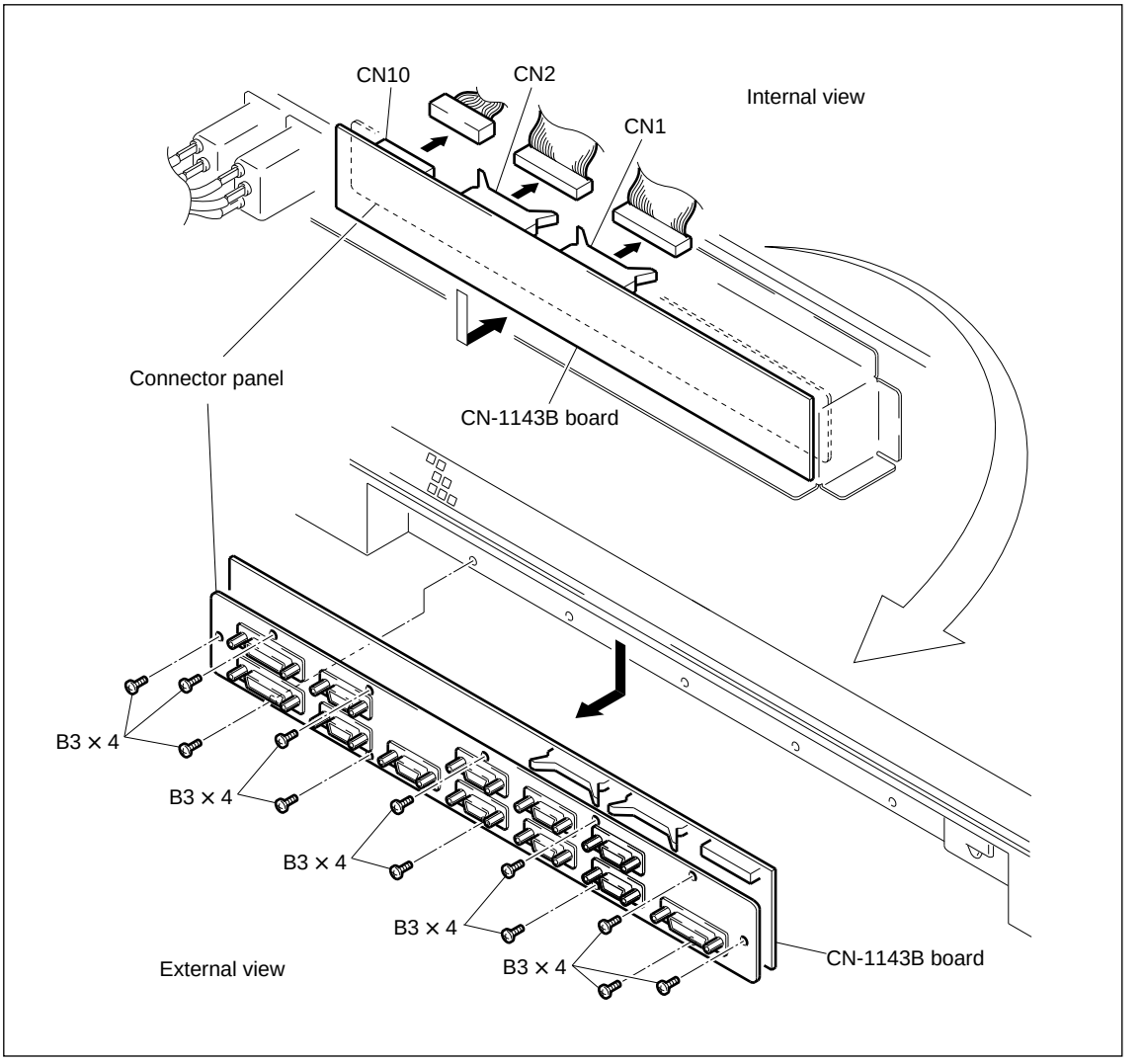
(1) Open the panel. (Refer to the section 1-2-1.)
(2) Turn off the power switch in the control panel. (Refer to the section 1-2-2.)
(3) Remove the six screws and the SW cover.
(4) Remove the four screws and disconnect the two connectors (CN2 and CN20), and then remove the SW bracket.
(5) Disconnect the 16 connectors (CN3 through CN18).
(6) Remove the eight screws and the CN-1150 board.



(7) Install the CN-1150 board in the reverse order of the procedures (1) through (6).

3. CN-1143B Board (BKDS-7025/7026)

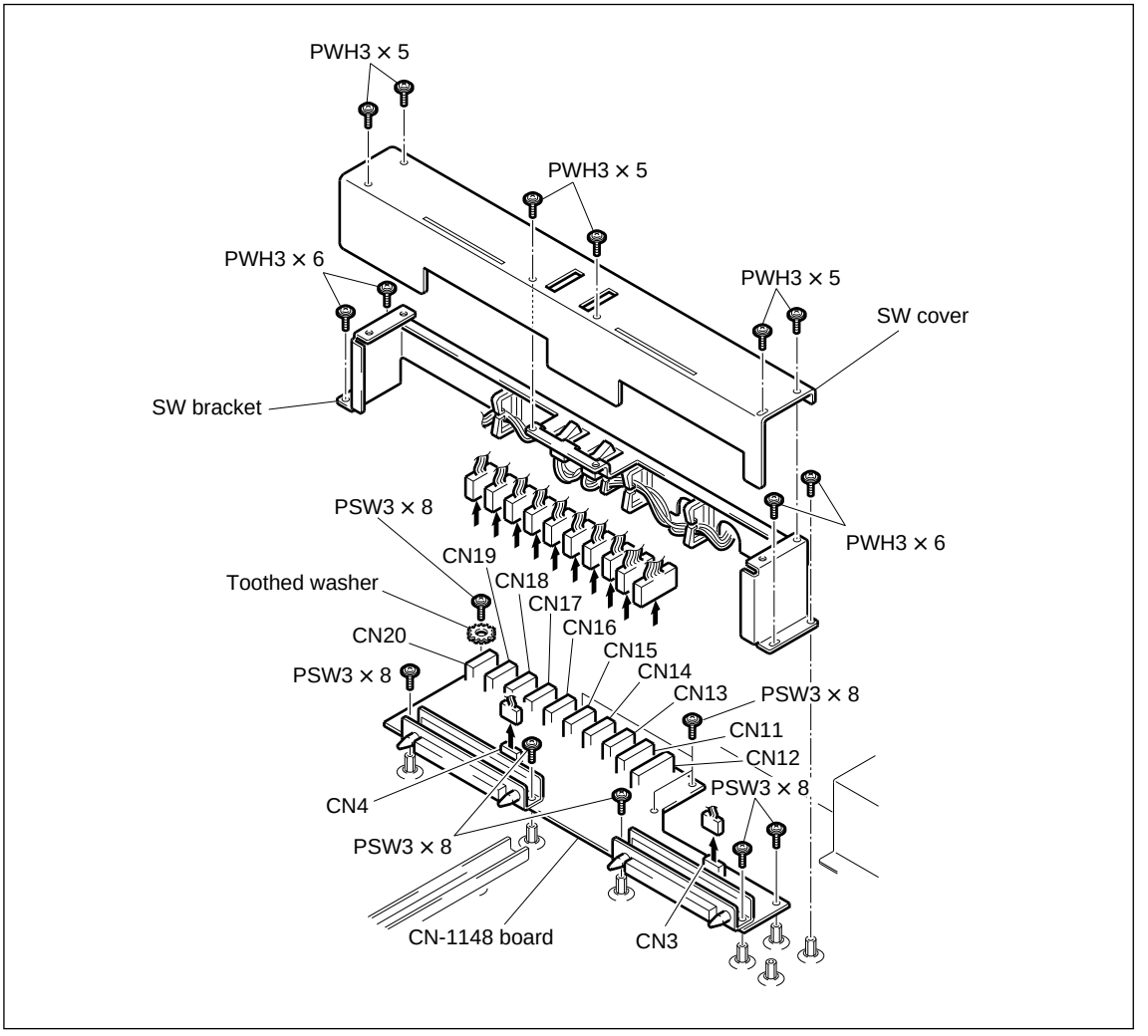
(1) Open the panel. (Refer to the section 1-2-1.)
(2) Turn off the power switch in the control panel. (Refer to the section 1-2-2.)
(3) Disconnect the three connectors (CN1, CN2 and CN10).
(4) Remove the 20 screws on the connector panel.
(5) Remove the CN-1143B board installing with the connector panel.



(6) Install the CN-1143B board in the reverse order of the procedures (1) through (5).

4. CN-1148 Board (BKDS-7025/7026)

(1) Open the panel. (Refer to the section 1-2-1.)
(2) Turn off the power switch in the control panel. (Refer to the section 1-2-2.)
(3) Remove the six screws and the SW cover.
(4) Remove the four screws and the SW bracket.
(5) Disconnect the 12 connectors (CN3, CN4 and CN11 through CN20).
(6) Remove the nine screws and the CN-1148 board.



(7) Install the CN-1148 board in the reverse order of the procedures (1) through (6).

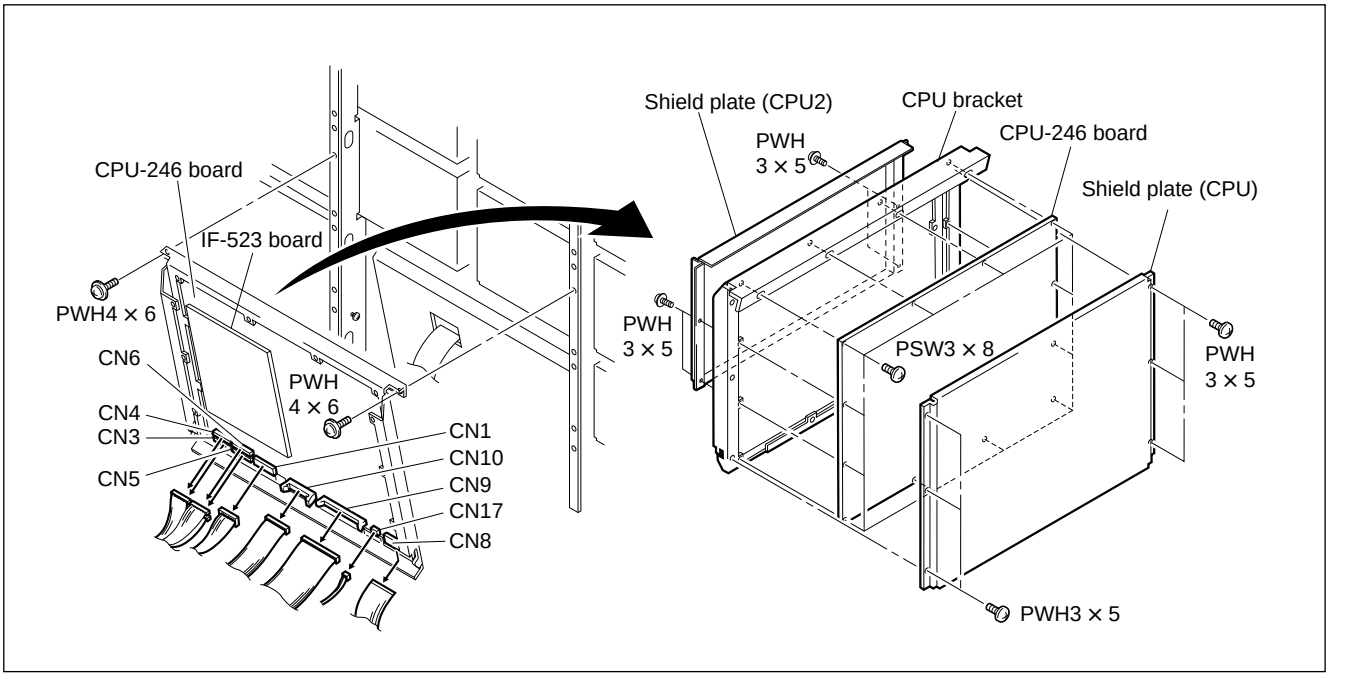
5. CPU-246 Board (BKDS-7015)

(1) Open the panel. (Refer to the section 1-2-1.)
(2) Turn off the power switch in the control panel. (Refer to the section 1-2-2.)
(3) Remove the IF-523 board. (Refer to "7. IF-523 Board" in this section.)

Note

When Control Port Expansion Board BKDS-7001 is not installed, it is not necessary to carry out the step (3).

(4) Disconnect the eight connectors (CN1, CN3 through CN6, CN9 through CN10 and CN17).
(5) Disconnect the flexible card wire (CN8).
(6) Remove the two screws and the CPU-246 board.
(7) Remove the 22 screws and remove the shield plate (CPU), the shield plate (CPU2) and the CPU bracket.



(8) Install the CPU-246 board in the reverse order of the procedures (1) through (7).

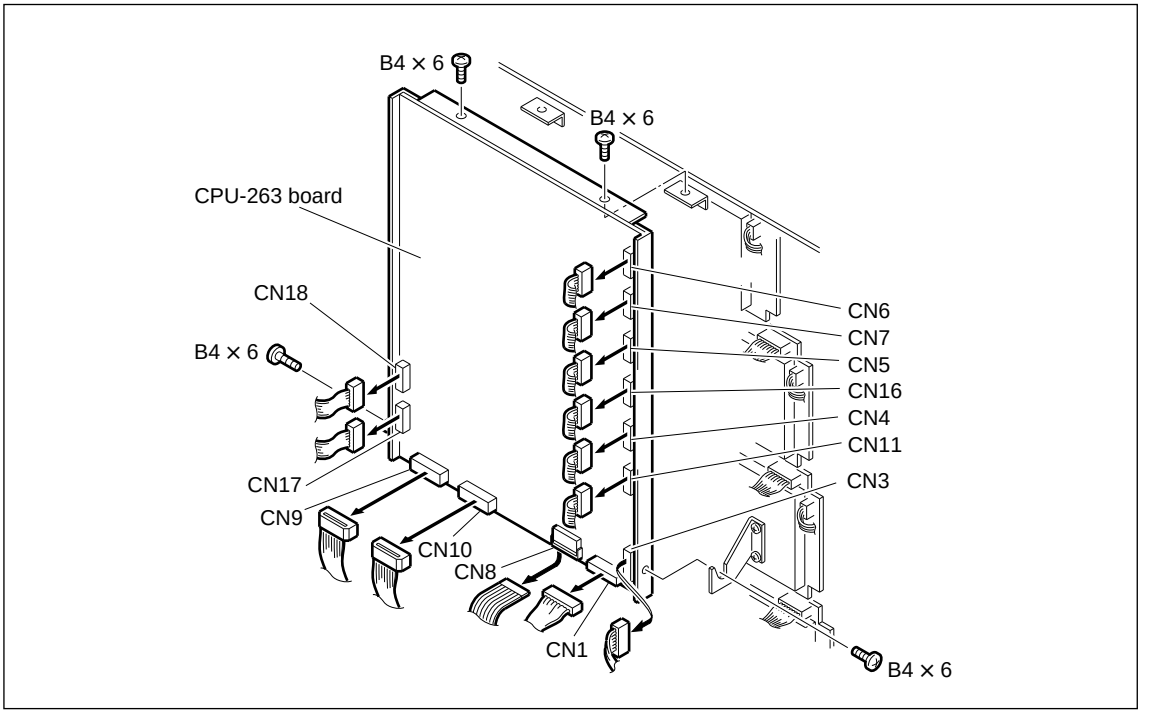
6. CPU-263 Board (BKDS-7025/7026)

(1) Open the panel. (Refer to the section 1-2-1.)
(2) Turn off the power switch in the control panel. (Refer to the section 1-2-2.)
(3) Remove the IF-523 board. (Refer to "7. IF-523 Board" in this section.)

Note

When Control Port Expansion Board BKDS-7001 is not installed, it is not necessary to carry out the step (3).

(4) Disconnect the 12 connectors (CN1, CN3 through CN7, CN9 through CN11 and CN16 through CN18).
(5) Disconnect the flexible card wire (CN8).
(6) Remove the four screws and the CPU-263 board.

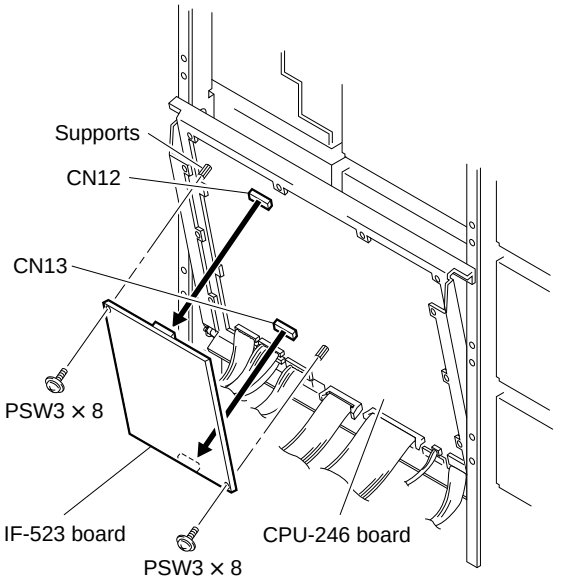


(7) Install the CPU-263 board in the reverse order of the procedures (1) through (6).

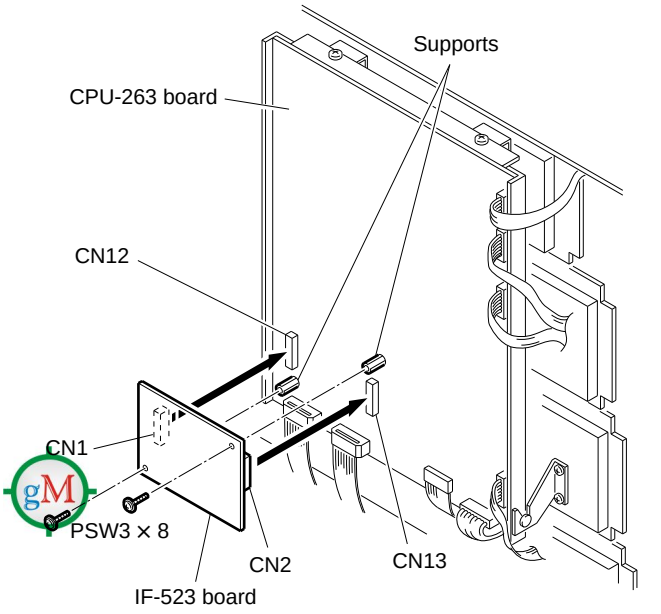
7. IF-523 Board (BKDS-7001)

(1) Open the panel. (Refer to the section 1-2-1.)
(2) Turn off the power switch in the control panel. (Refer to the section 1-2-2.)
(3) Remove the two screws and disconnect the IF-523 board from the two connectors (CN12 and CN13) on the CPU-246 board or the CPU-263 board.

BKDS-7015



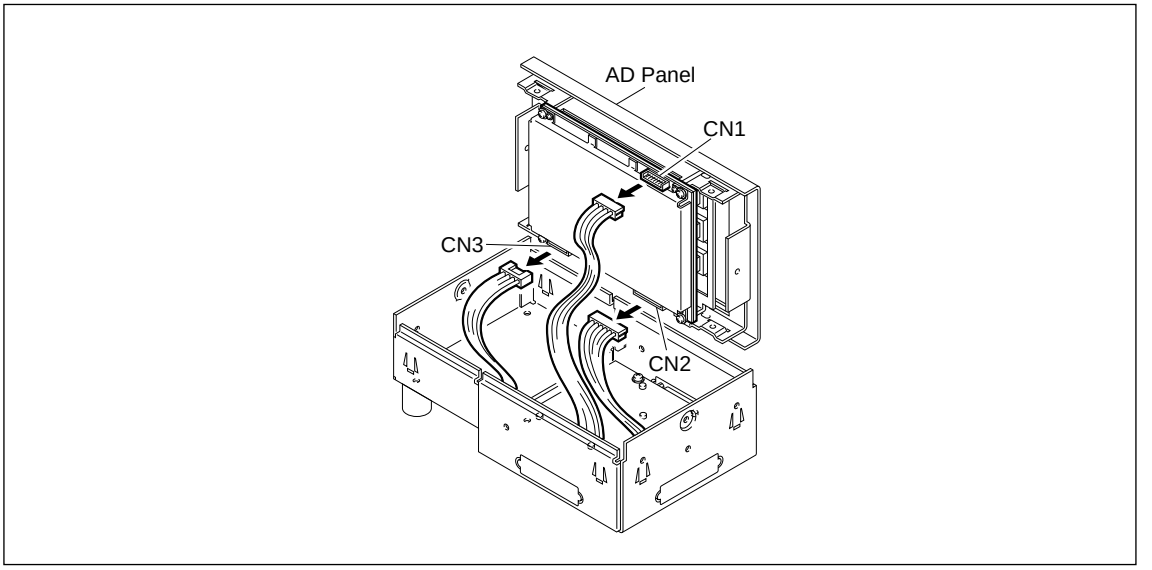
BKDS-7025/7026



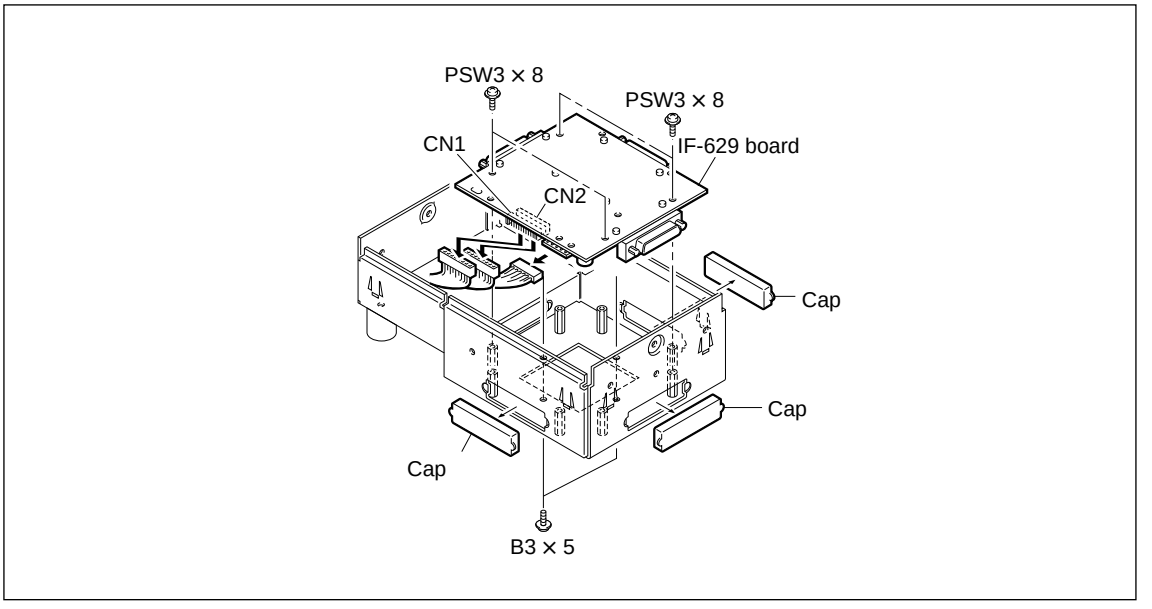
(4) Install the IF-523 board in the reverse order of the procedures (1) through (3).

8. IF-629 Board (BKDS-7075)

(1) Open the panel. (Refer to the section 1-2-1.)
(2) Turn off the power switch in the control panel. (Refer to the section 1-2-2.)
(3) Remove the two screws and the AD panel. (Refer to "2. Adaptor Box" in the section 1-2-3.)
(4) Disconnect the three connectors (CN1 through CN3).



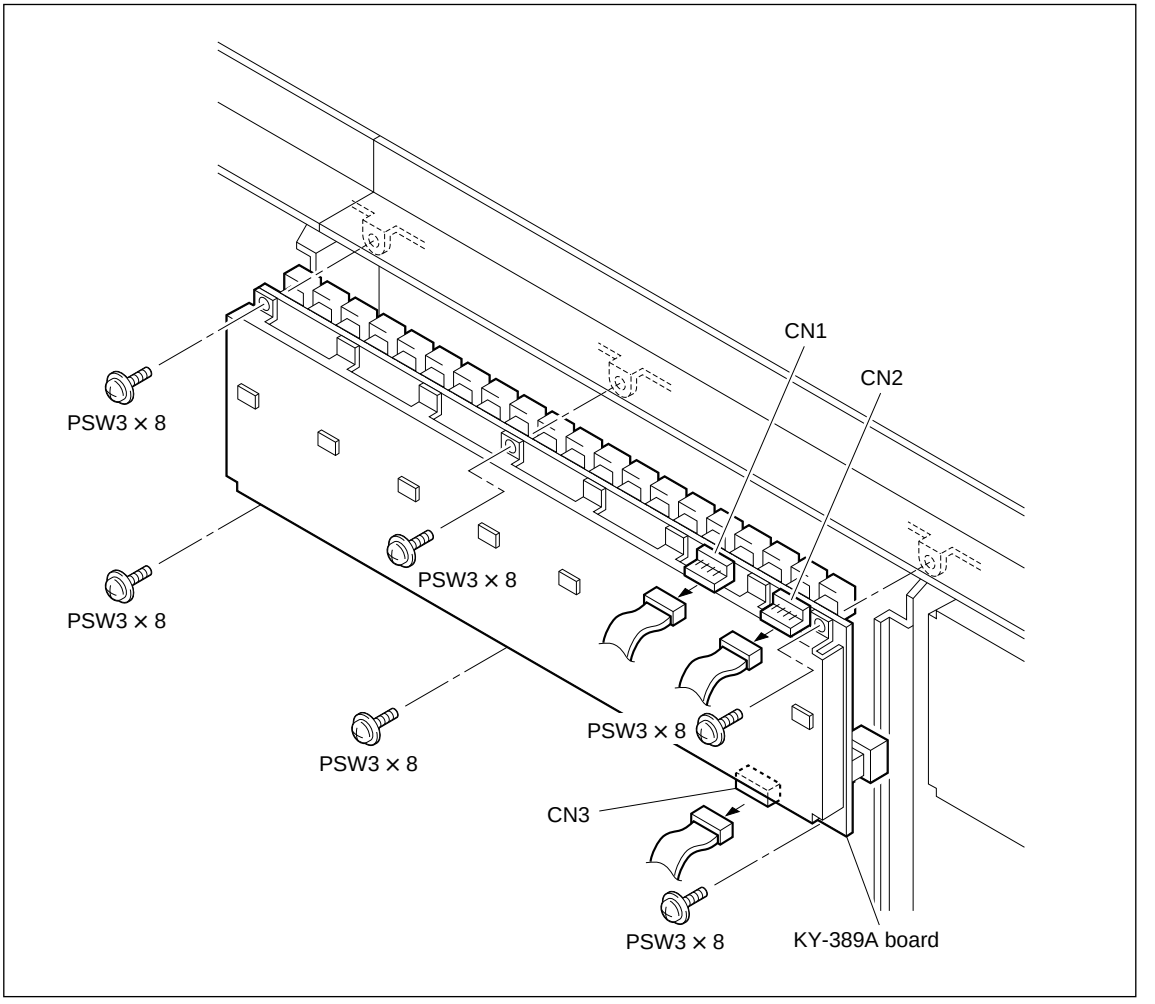
(5) Remove the three caps.
(6) Remove the six screws and the IF-629 board.
(7) Disconnect the three connectors (CN1 through CN3).



(8) Install the IF-629 board in the reverse order of the procedures (1) through (7).

9. KY-389A, 389B or 390 Board (BKDS-7015)

(1) Open the panel. (Refer to the section 1-2-1.)
(2) Turn off the power switch in the control panel. (Refer to the section 1-2-2.)
(3) Disconnect the three connectors (CN1 through CN3).
(4) Remove the six screws and the KY-389A, 389B or 390 board.
(5) Remove the LE-147, 148 or 180 board and the DC-92 board.
(Refer to “23. LE-147, 148 or 180 Board” or “25. DC-92 Board” in this section.)



(6) Install the KY-389A, 389B or 390 board in the reverse order of the procedures (1) through (5).

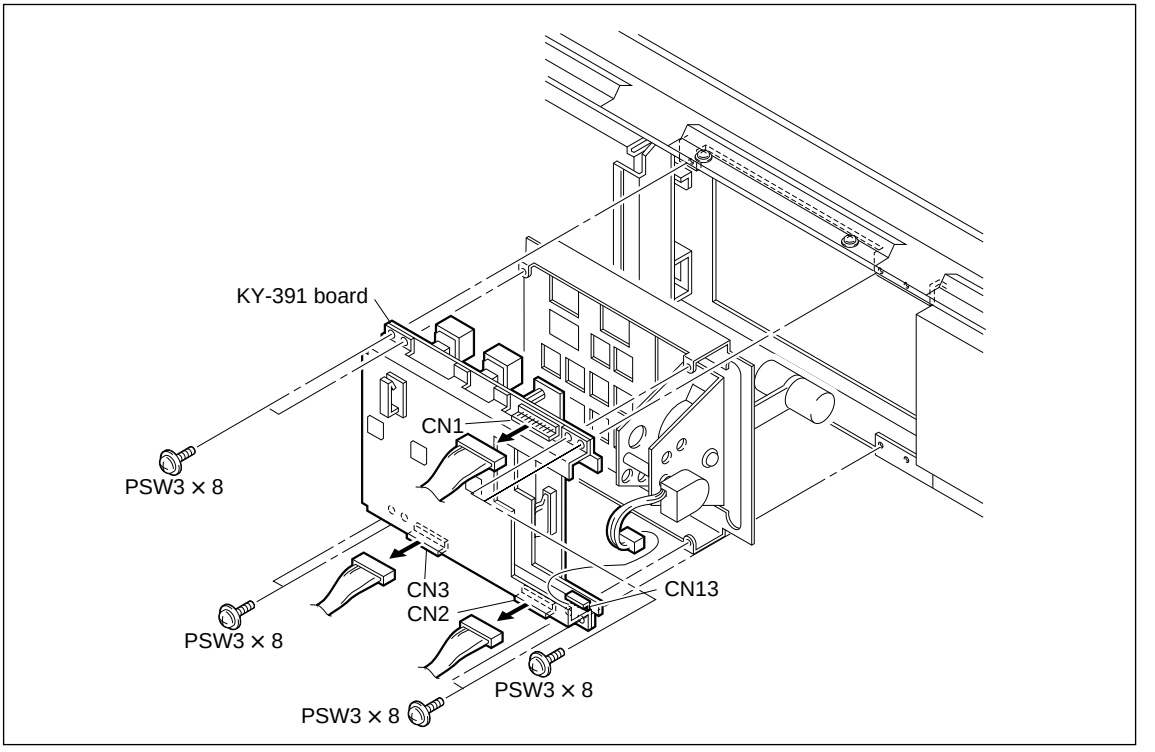
10. KY-391 or 392 Board (BKDS-7015)

(1) Open the panel. (Refer to the section 1-2-1.)
(2) Turn off the power switch in the control panel. (Refer to the section 1-2-2.)
(3) Remove the CPU-246 board. (Refer to "5. CPU-246 Board" in this section.)

Note

When removing the KY-391 board, it is not necessary to carry out the step (3).

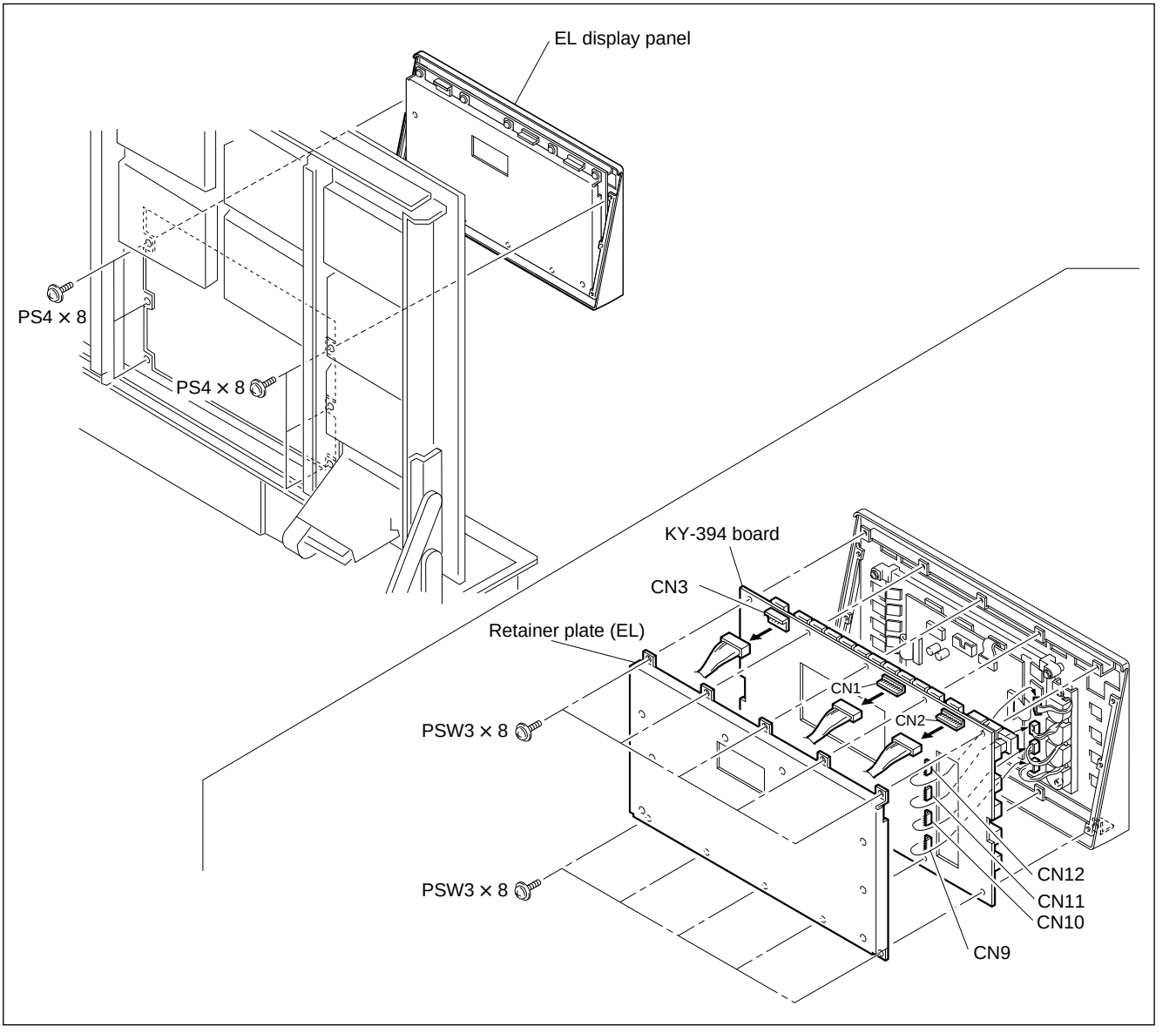
(4) Disconnect the four connectors (CN1 through CN3 and CN13).
(5) Remove the eight screws and the KY-391 or 392 board.
(6) Remove the LE-142 board and the LE-144 board.
(Refer to "19. LE-142 or 143 Board" or "20. LE-144 Board" in this section.)



(7) Install the KY-391 or 392 board in the reverse order of the procedures (1) through (6).

11. KY-394 Board (BKDS-7015)

(1) Open the panel. (Refer to the section 1-2-1.)
(2) Turn off the power switch in the control panel. (Refer to the section 1-2-2.)
(3) Remove the CPU-246 board. (Refer to "5. CPU-246 Board" in this section.)
(4) Remove the six screws (PS4 × 8) and the EL display panel.
(5) Disconnect the three connectors (CN1 through CN3).
(6) Remove the ten screws (PSW3 × 8) and the retainer plate (EL).
(7) Disconnect the four connectors (CN9 through CN12) and remove the KY-394 board.



(8) Install the KY-394 board in the reverse order of the procedures (1) through (7).

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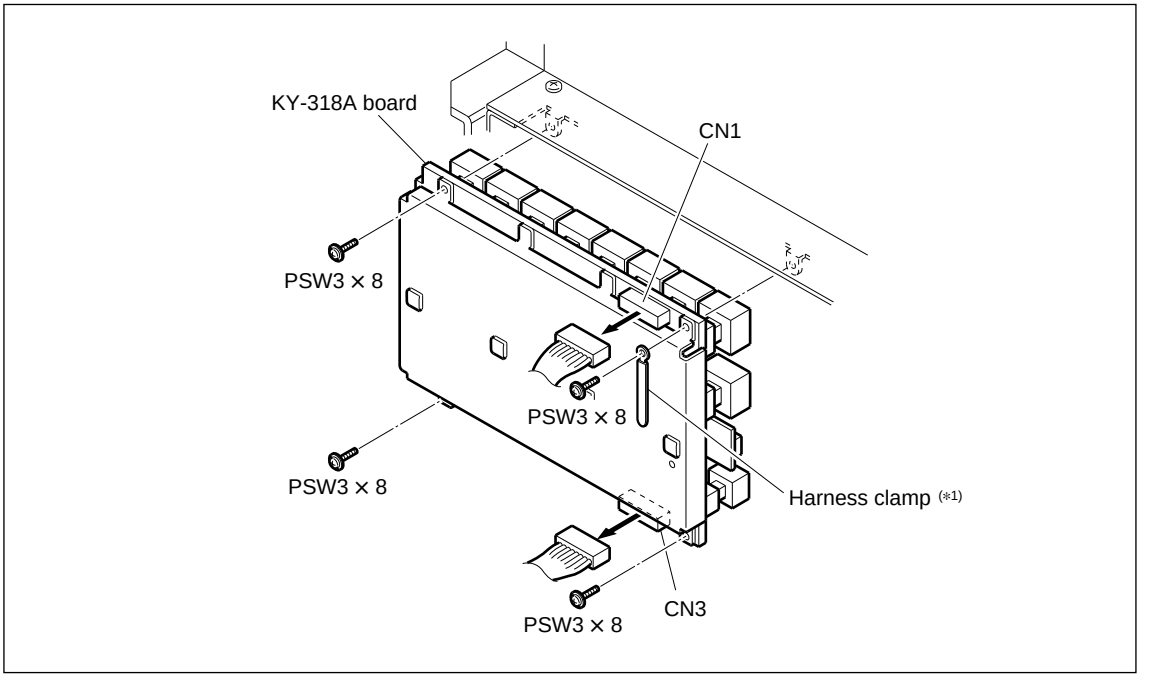
12. KY-318A, 318B or 331 Board (BKDS-7025/7026)

(1) Open the panel. (Refer to the section 1-2-1.)
(2) Turn off the power switch in the control panel. (Refer to the section 1-2-2.)
(3) Disconnect the two connectors.
For KY-318A or 318B Board : CN1 and CN3
For KY-331 Board : CN1 and CN2
(4) Remove the four screws and the KY-318A, 318B or 331 board.



(5) Install the KY-318A, 318B or 331 board in the reverse order of the procedures (1) through (4).

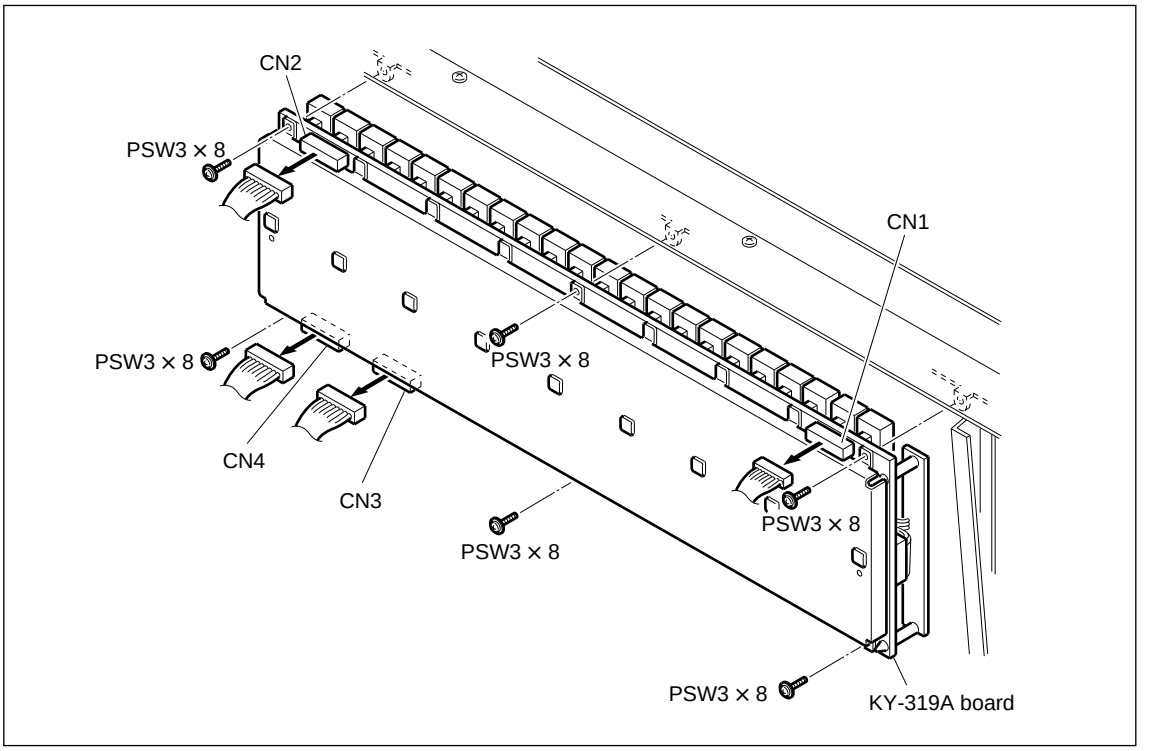
Notes

When replacing the KY-318A or 318B board, be sure to select the switch S1.
(For selection details, refer to the section 5-1-5 in the installation manual.)

(*1) : When installing/removing the KY-318A or 318B board for the PGM/PST line of BKDS-7025/7026, use a harness clamp to hold the harness (CN1).

13. KY-319A, 319B or 332 Board (BKDS-7025/7026)

(1) Open the panel. (Refer to the section 1-2-1.)
(2) Turn off the power switch in the control panel. (Refer to the section 1-2-2.)
(3) Disconnect the four connectors (CN1 through CN4).
(4) Remove the six screws and the KY-319A, 319B or 332 board.



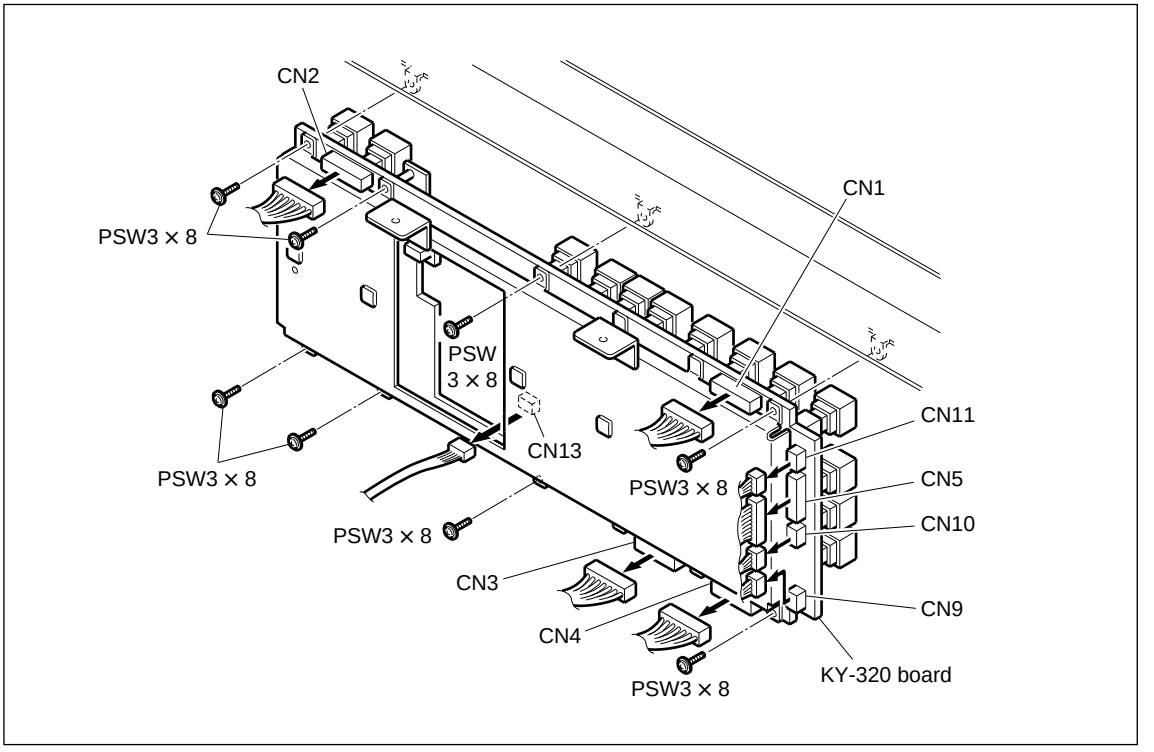
(5) Install the KY-319A, 319B or 332 board in the reverse order of the procedures (1) through (4).

Note

When replacing the KY-319A or 319B board, be sure to select the switch S1.
(For selection details, refer to the section 5-1-5 in the installation manual.)

14. KY-320, 321, 367 or 411 Board (BKDS-7025/7026)

(1) Open the panel. (Refer to the section 1-2-1.)
(2) Turn off the power switch in the control panel. (Refer to the section 1-2-2.)
(3) Remove the CPU-263 board. (Refer to "6. CPU-263 Board" in this section.)
(4) Disconnect the nine connectors (CN1 through CN5, CN9 through CN11 and CN13).
(5) Remove the eight screws and the KY-320, 321, 367 or 411 board.



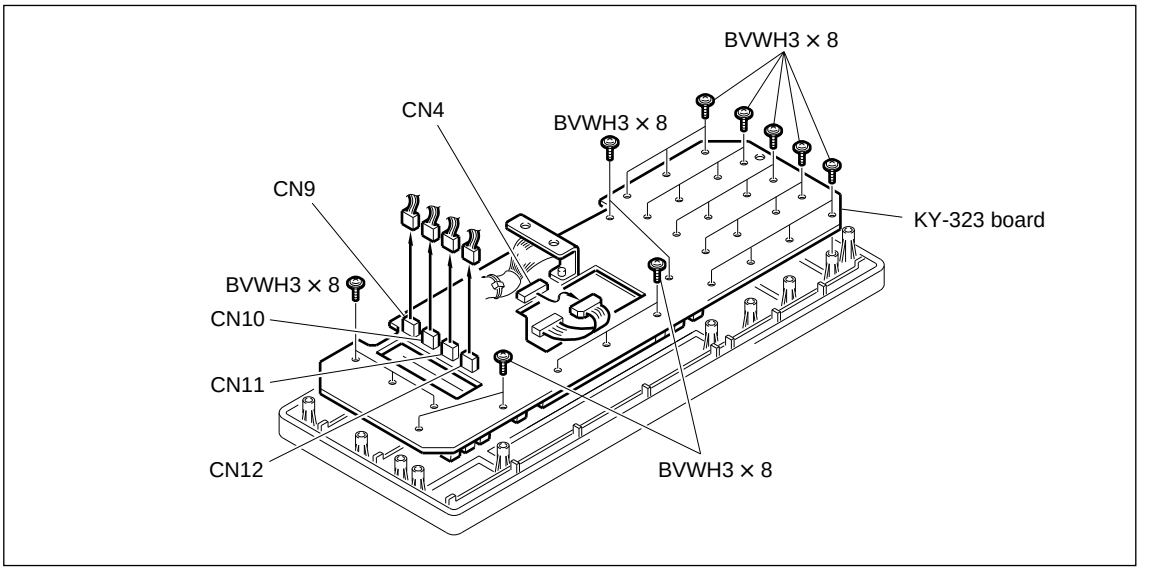
(6) Install the KY-320, 321, 367 or 411 board in the reverse order of the procedures (1) through (5).

Note

When replacing the KY-320, 321, 367 or 411 board, be sure to select the switch S1.
(For selection details, refer to the section 5-1-5 in the installation manual.)

15. KY-323 Board (BKDS-7025/7026)

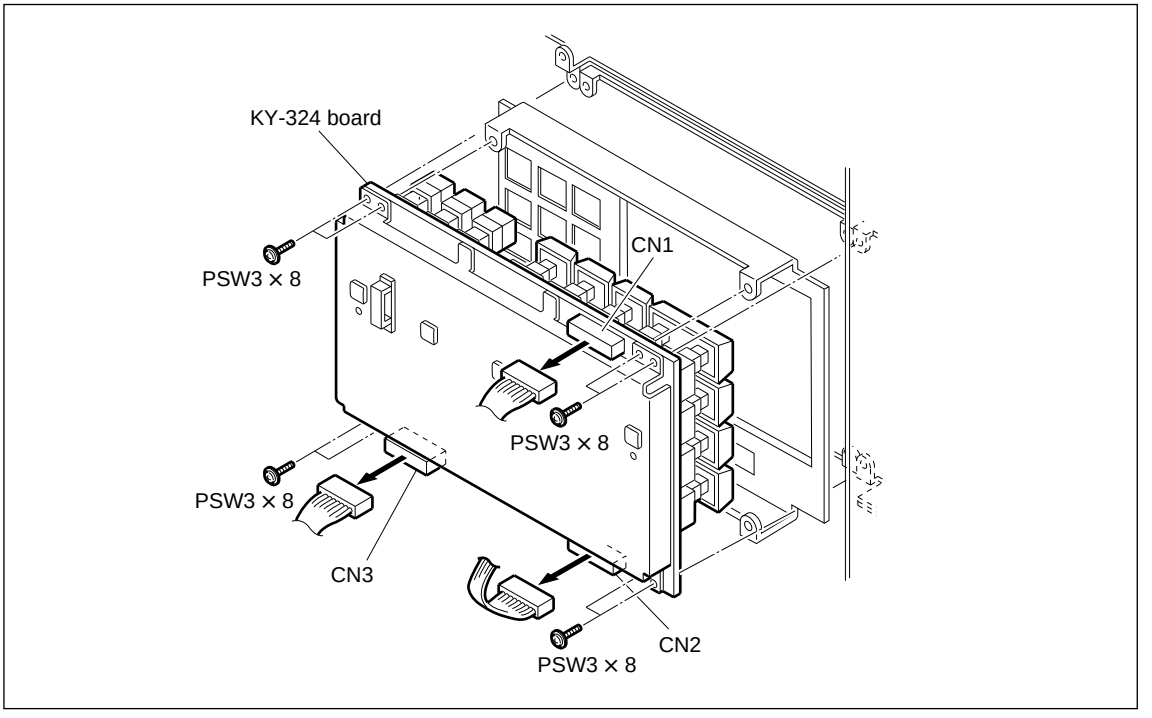
(1) Remove the exterior part of the display panel. (Refer to the section 1-2-3.)
(2) Disconnect the five connectors (CN4 and CN9 through CN12).
(3) Remove the 29 screws and the KY-323 board.



(4) Install the KY-323 board in the reverse order of the procedures (1) through (3).

16. KY-324, 393 (BKDS-7025/7026/7340), 395A, 395B or 395C (BKDS-7033) Board

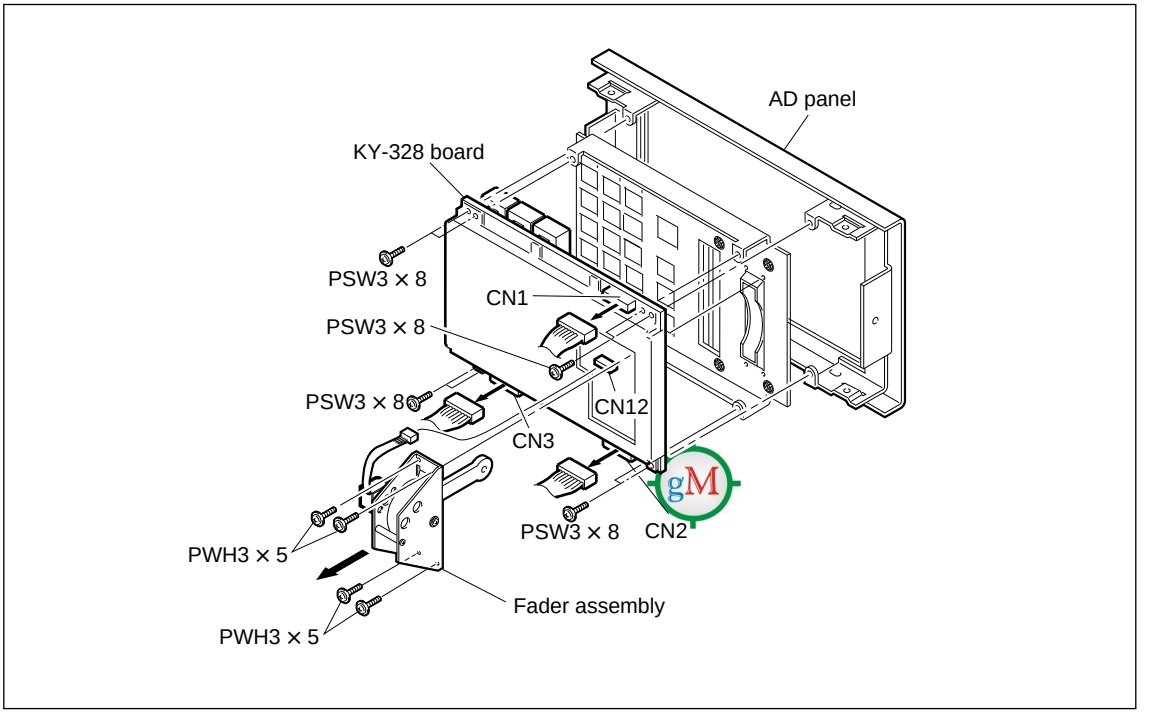
(1) Open the panel. (Refer to the section 1-2-1.)
(2) Turn off the power switch in the control panel. (Refer to the section 1-2-2.)
(3) When removing the KY-324, 393, 395A, 395B, or 395C board with installed to the adaptor box (BKDS-7075), remove the two screws and the AD panel.
(Refer to "2. Adaptor Box" in the section 1-2-3.)
(4) Disconnect the connectors.
For KY-324 Board : CN1 through CN3
For KY-393 Board : CN1 through CN3
For KY-395A Board : CN1 through CN3
For KY-395B Board : CN1 through CN3
For KY-395C Board : CN1 through CN3
(5) Remove the eight screws and the KY-324, 393, 395A, 395B, or 395C board.



(6) Install the KY-324, 393, 395A, 395B, or 395C board in the reverse order of the procedures (1) through (5).

17. KY-328 Board (BKDS-7030)

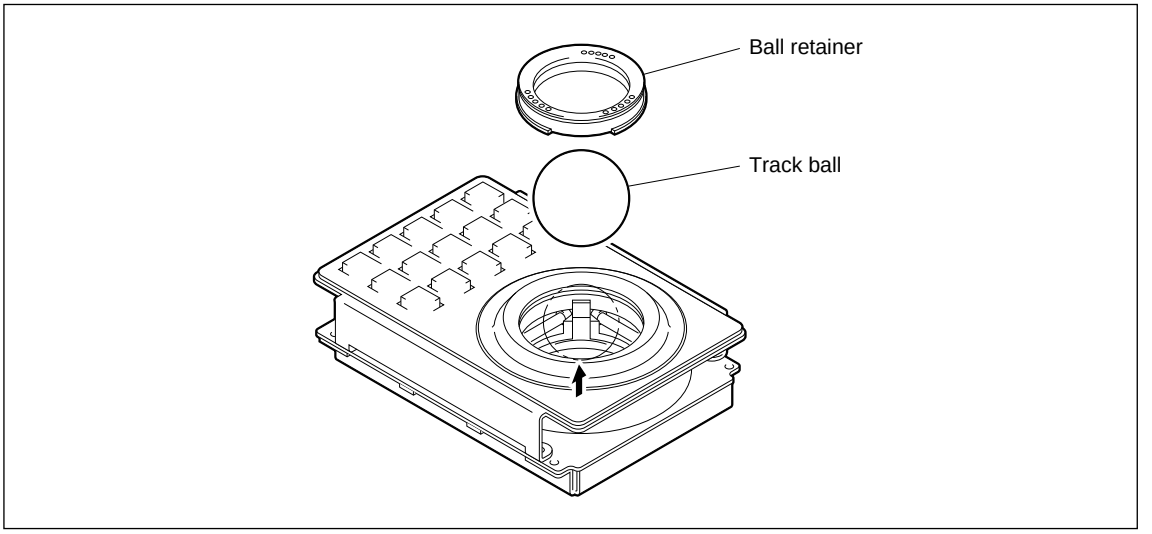
(1) Open the panel. (Refer to the section 1-2-1.)
(2) Turn off the power switch in the control panel. (Refer to the section 1-2-2.)
(3) Remove the CPU-246 board. (Refer to “5. CPU-246 Board” in this section.)
(4) When removing the KY-328 board with installed to the adaptor box(BKDS-7075), remove the two screws and the AD panel. (Refer to “2. Adaptor Box” in the section 1-2-3.)
(5) Disconnect the four connectors (CN1 through CN3 and CN12).
(6) Remove the fader. (Refer to the section 2-2-2.)
(7) Remove the eight screws and the KY-328 board.



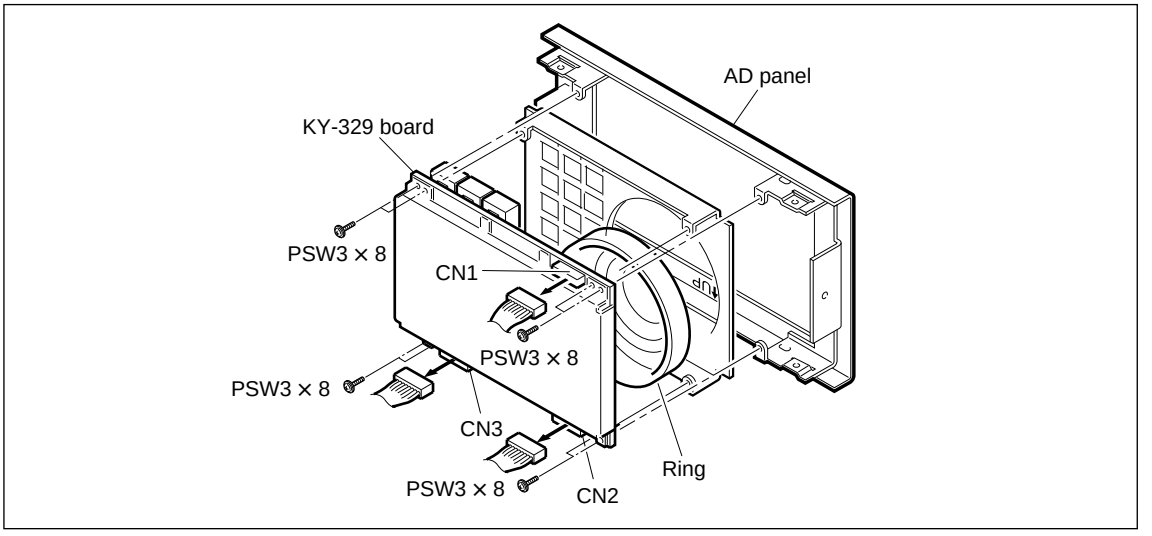
(8) Install the KY-328 board in the reverse order of the procedures (1) through (7).

18. KY-329 Board (BKDS-7031)

(1) Open the panel. (Refer to the section 1-2-1.)
(2) Turn off the power switch in the control panel. (Refer to the section 1-2-2.)
(3) When removing the KY-329 board with installed to the adaptor box (BKDS-7075), remove the two screws and the AD panel. (Refer to "2. Adaptor Box" in the section 1-2-3.)
(4) Turn the ball retainer counter-clockwise to release a lock.
(5) Push up the track ball from the hole on the KY-329 board and remove the track ball and ball retainer.



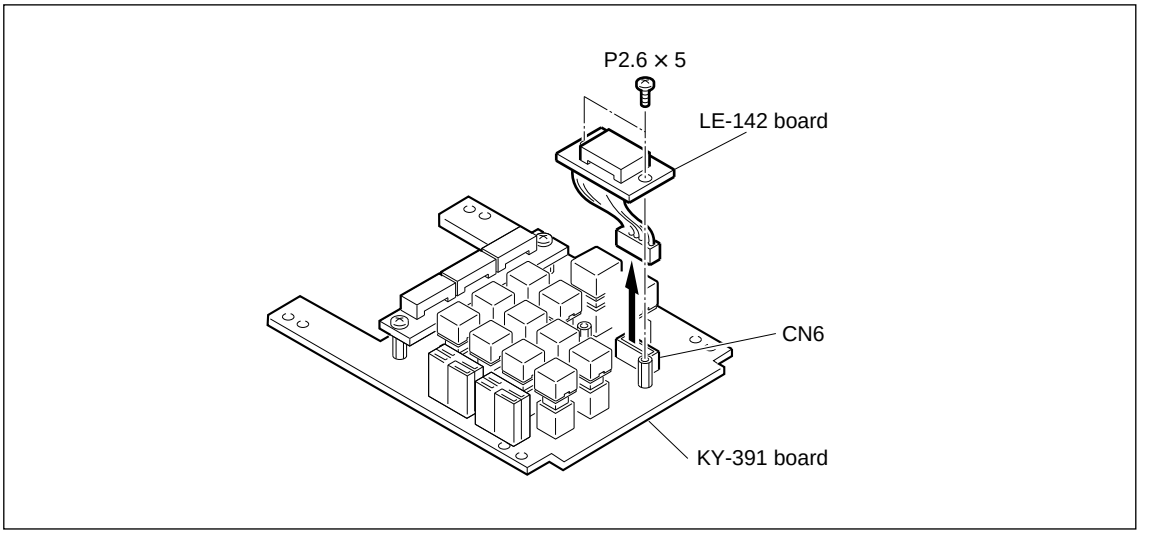
(6) Disconnect the three connectors (CN1 through CN3).
(7) Remove the eight screws and the KY-329 board.
(8) Remove the ring.

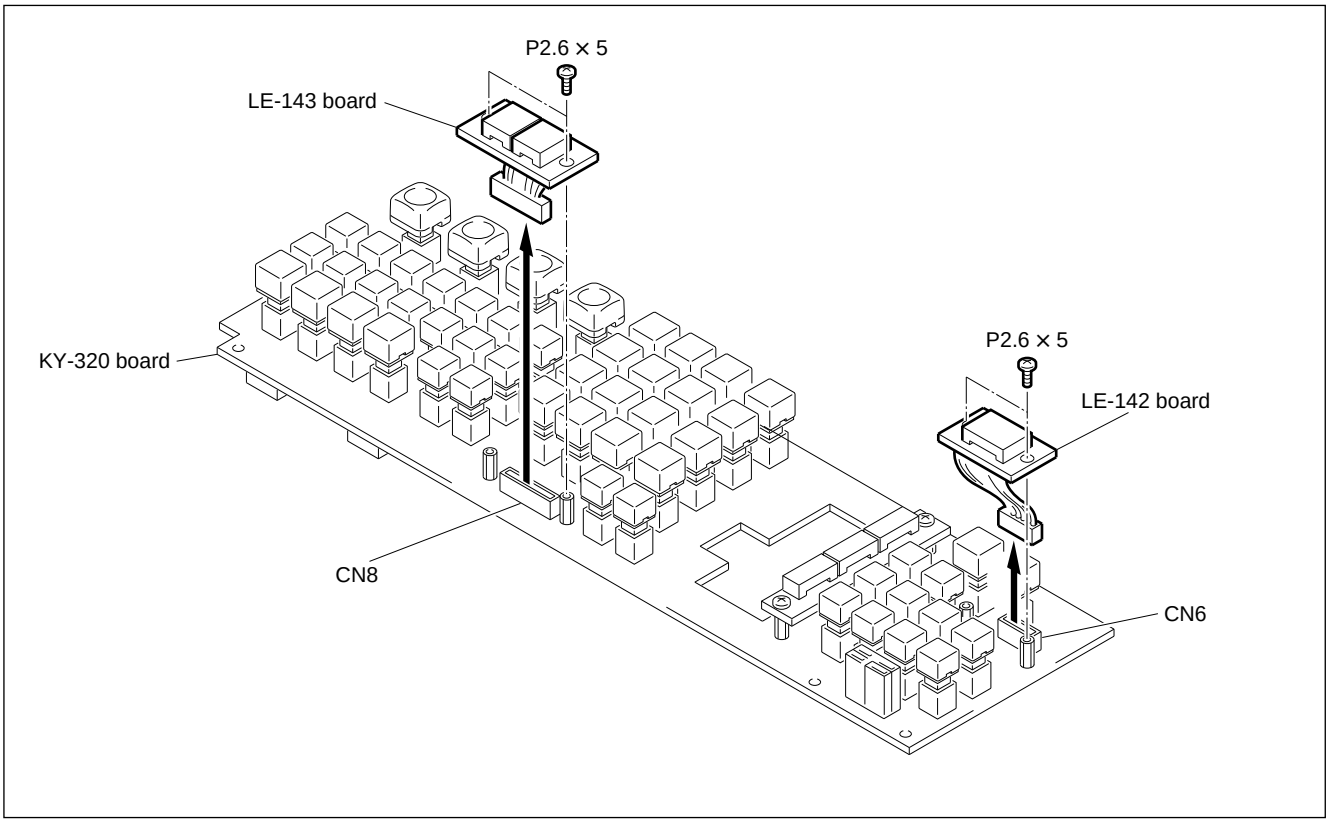


(9) Install the KY-329 board in the reverse order of the procedures (6) through (8).
(10) Install the track ball and ball retainer.
(11) Turn the ball retainer clockwise to lock.

19. LE-142 or 143 Board (BKDS-7015/7025/7026/7340)

(1) Open the panel. (Refer to the section 1-2-1.)
(2) Turn off the power switch in the control panel. (Refer to the section 1-2-2.)
(3) When removing the KY-393 board with installed to the adaptor box (BKDS-7075), remove the two screws and the AD panel. (Refer to "2. Adaptor Box" in the section 1-2-3.)
When removing the KY-391,392 or 393 board in the BKDS-7015, remove the CPU-246 board. (Refer to "5. CPU-246 Board" in this section.)
When removing the KY-320, 321, 367 or 411 board in the BKDS-7025/7026, remove the CPU-263 board. (Refer to "6. CPU-263 Board" in this section)
(4) Remove the KY-320, 321,367, 391, 392, 393 or 411 board.
(Refer to "10. KY-391 or 392 Board" or "14. KY-320, 321, 367, or 411 Board" or "16. KY-324, 393, 395A, 395B or 395C Board" in this section.)
(5) Remove the two screws securing the LE-142 or 143 board.
(6) Disconnect the following connector on the KY-320, 321, 367, 391, 392, 393 or 411 board and remove the LE-142 or 143 board.
For KY-391, 392 or 411 Board : CN6
For KY-393 Board : CN10 or CN11
For KY-320, 321 or 367 Board : CN6 or CN8



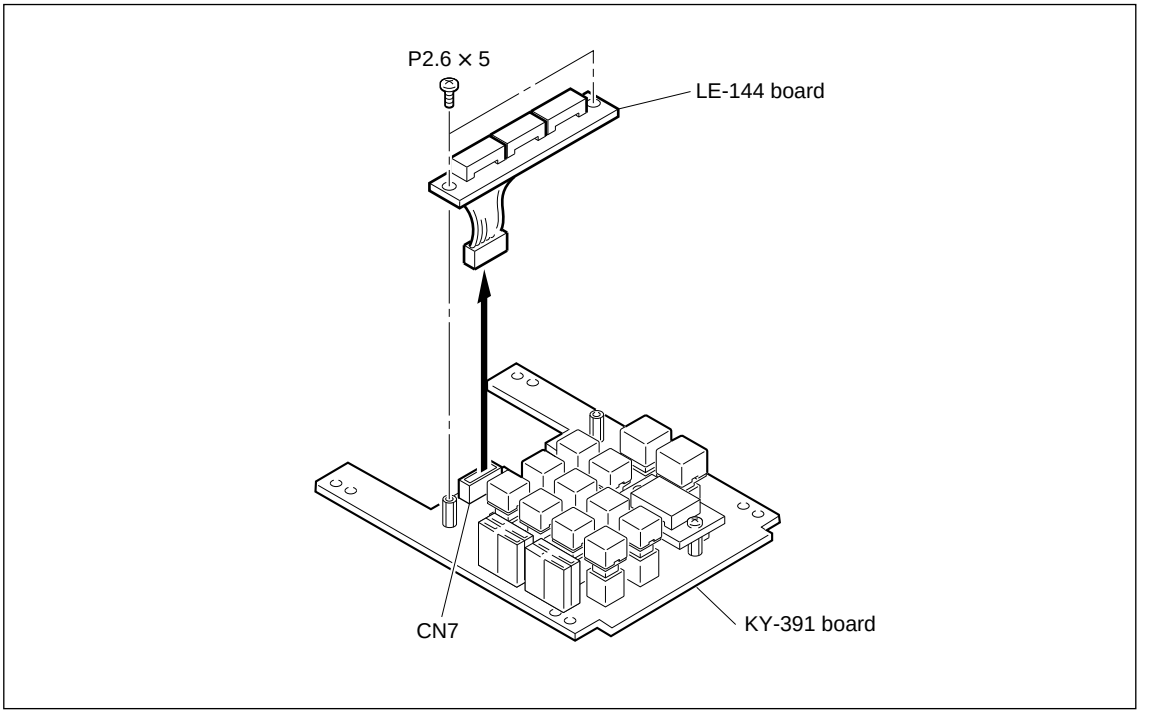


(7) Install the LE-142 or 143 board in the reverse order of the procedures (1) through (6).

20. LE-144 Board (BKDS-7015/7025/7026/7030)

(1) Open the panel. (Refer to the section 1-2-1.)
(2) Turn off the power switch in the control panel. (Refer to the section 1-2-2.)
(3) When removing the KY-328 board with installed to the adaptor box (BKDS-7075), remove the two screws and the AD panel. (Refer to "2. Adaptor Box" in the section 1-2-3.)
When removing the KY-328 or 392 board in the BKDS-7015, remove the CPU-246 board. (Refer to "5. CPU-246 Board" in this section.)
When removing the KY-320, 321, 367 or 411 board in the BKDS-7025/7026, remove the CPU-263 board. (Refer to "6. CPU-263 Board" in this section.)
(4) Remove the KY-320, 321, 328, 367, 391, 392 or 411 board.
(Refer to "10. KY-391 or 392 Board" or "14. KY-320, 321, 367 or 411 Board" or "17. KY-328 Board" in this section.)
(5) Remove the two screws with installed to the LE-144 board.
(6) Disconnect the one connector (CN7) and remove the LE-144 board.

KY-391 or 392 board



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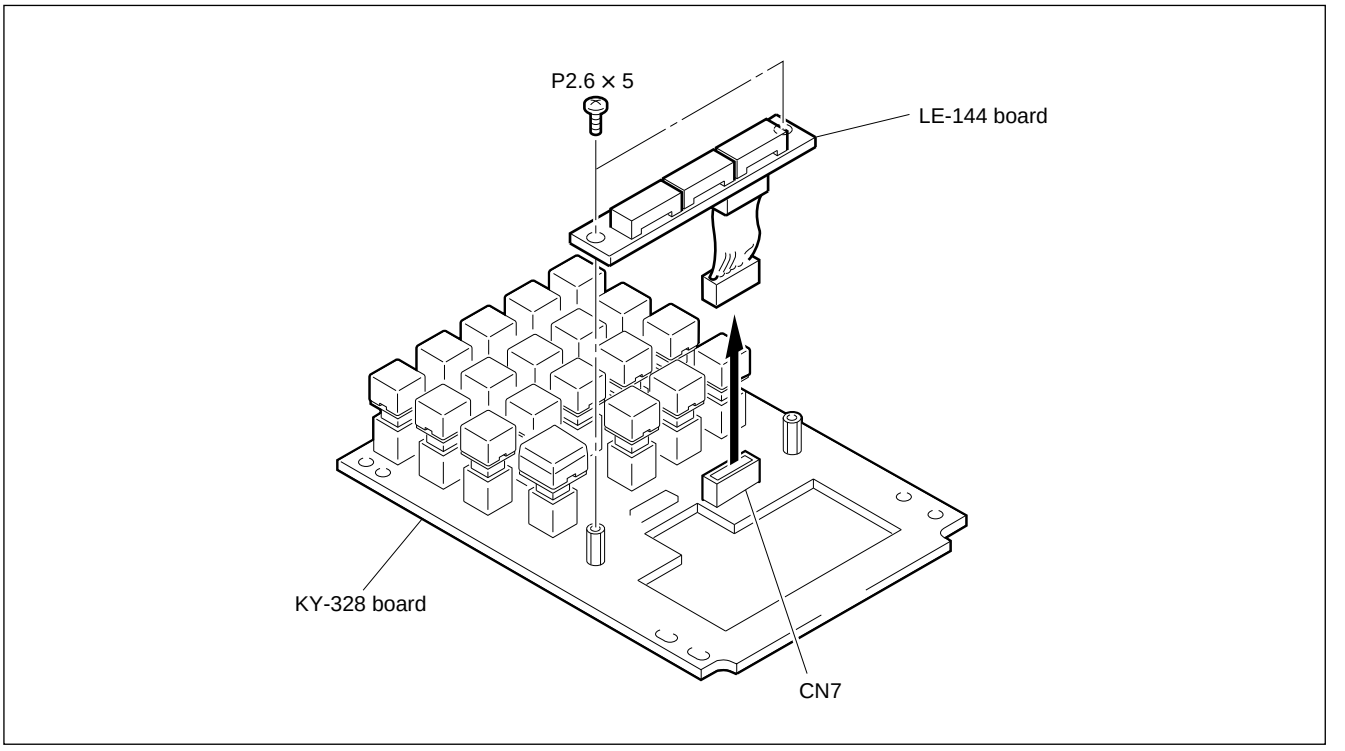
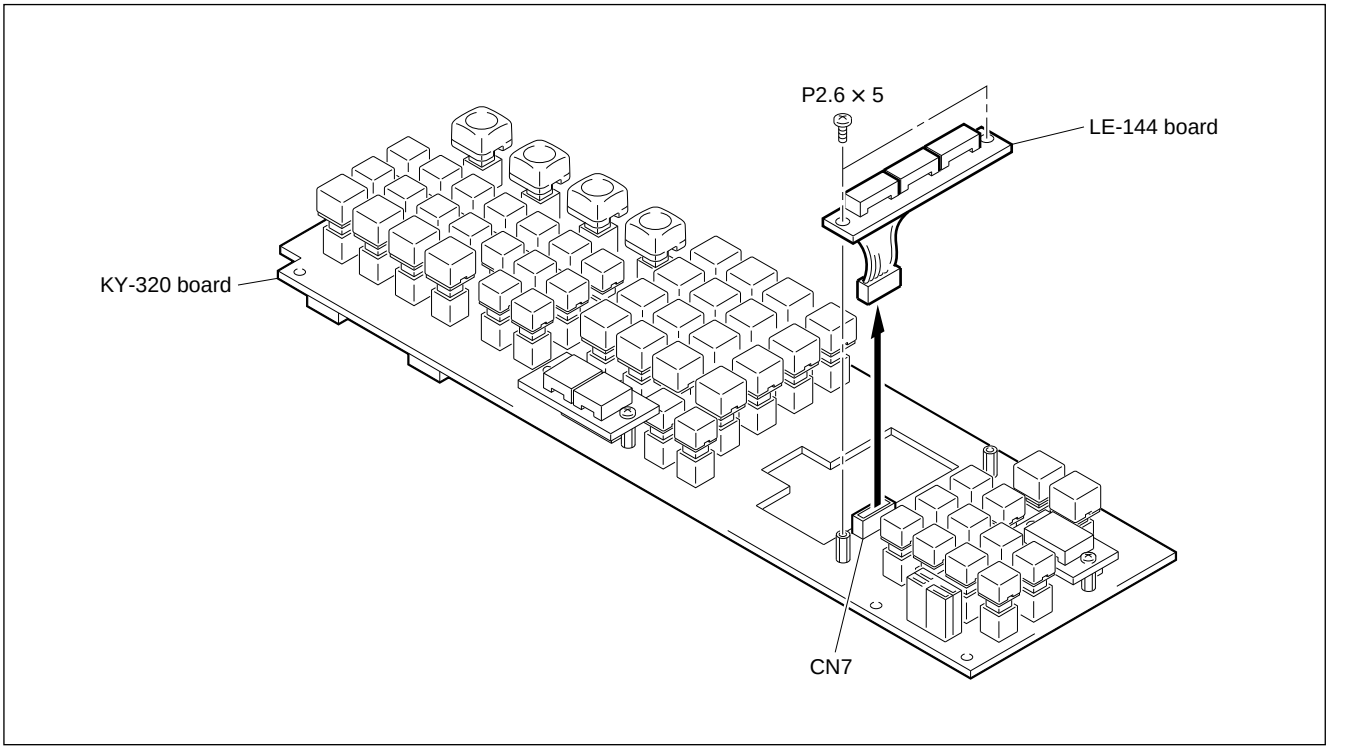
KY-328 board



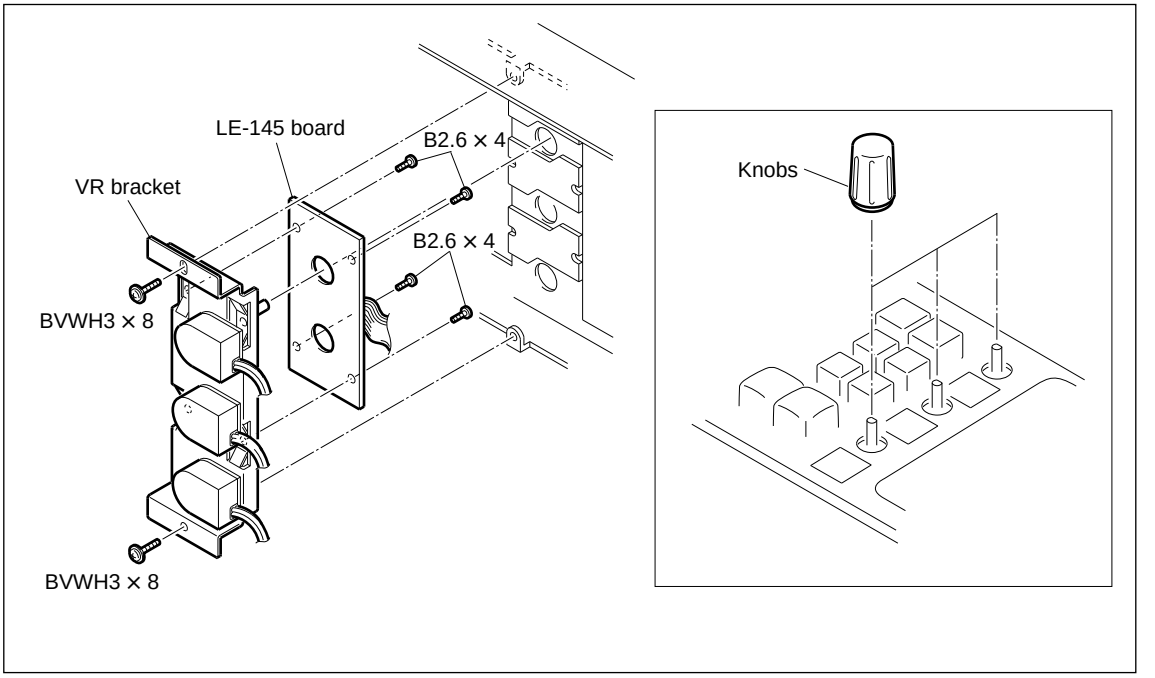
KY-320, 321, 367, or 411 board



(7) Install the LE-144 board in the reverse order of the procedures (1) through (6).

21. LE-145 Board (BKDS-7025/7026)

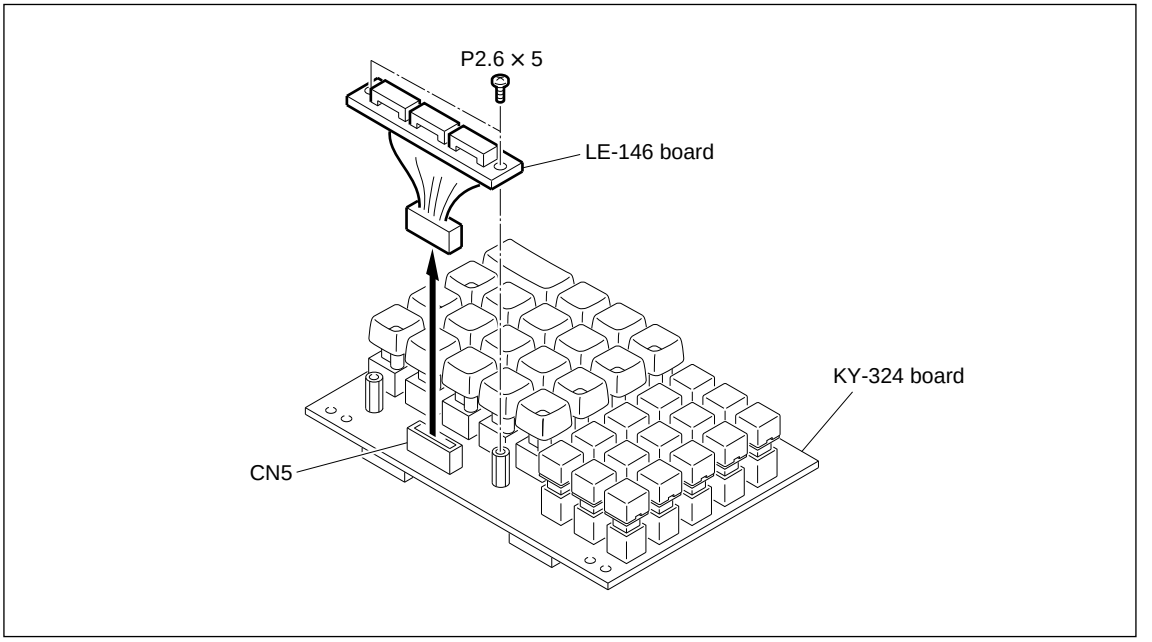
(1) Remove the three knobs.
(2) Open the panel. (Refer to the section 1-2-1.)
(3) Turn off the power switch in the control panel. (Refer to the section 1-2-2.)
(4) Remove the CPU-263 board. (Refer to “6. CPU-263 Board” in this section.)
(5) Remove the KY-320, 321 or 367 board.
(Refer to “14. KY-320, 321 , 367 or 411 Board” in this section.)
(6) Remove the two screws and the LE-145 board installing with the VR bracket.
(7) Remove the four screws and the LE-145 board from the VR bracket.



(8) Install the LE-145 board in the reverse order of the procedures (1) through (7).

22. LE-146 Board (BKDS-7025/7026)

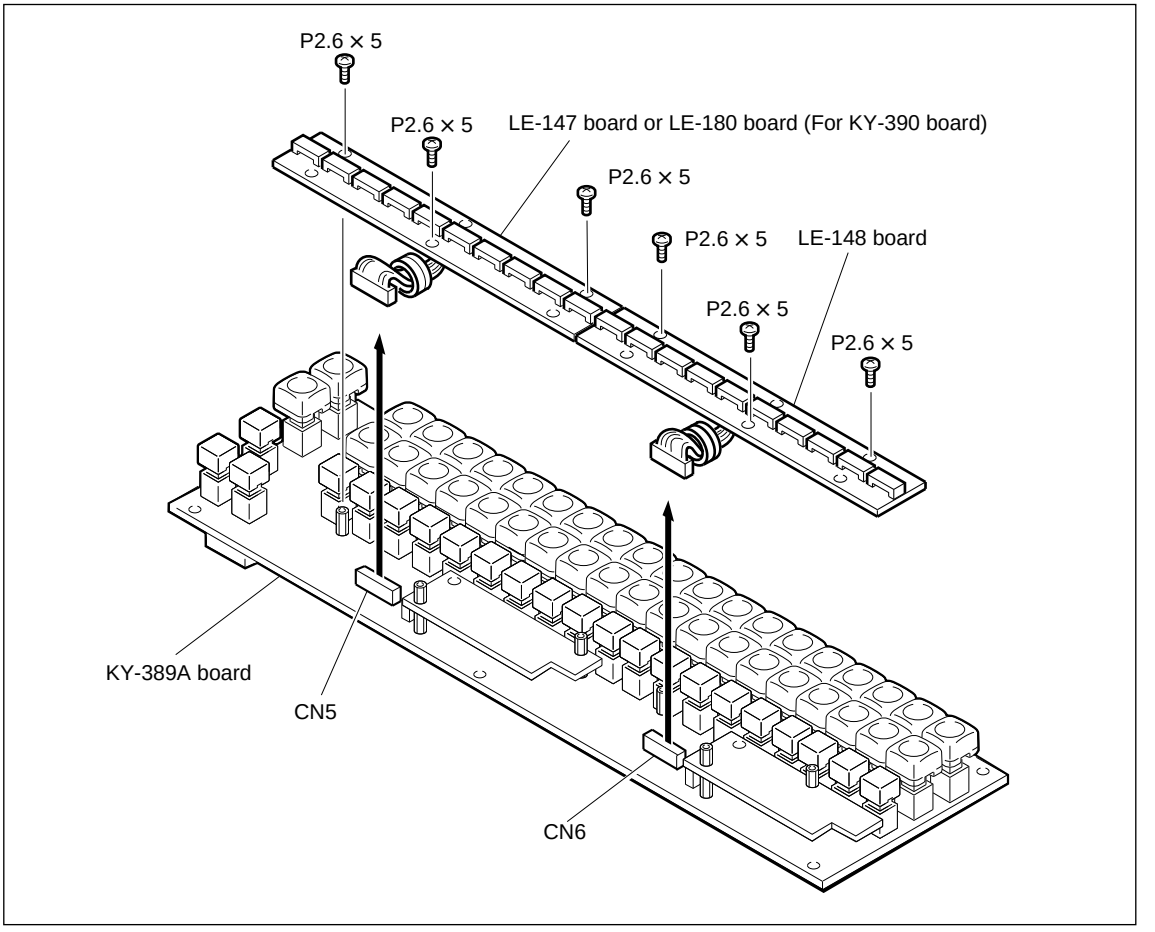
(1) Open the panel. (Refer to the section 1-2-1.)
(2) Turn off the power switch in the control panel. (Refer to the section 1-2-2.)
(3) Remove the KY-324 board. (Refer to "16. KY-324, 393, 395A, 395B or 395C Board" in this section.)
(4) Remove the two screws securing the LE-146 board.
(5) Disconnect the one connector (CN5) on the KY-324 board and remove the LE-146 board.



(6) Install the LE-146 board in the reverse order of the procedures (1) through (5).

23. LE-147, 148 or 180 Board (BKDS-7002/7015)

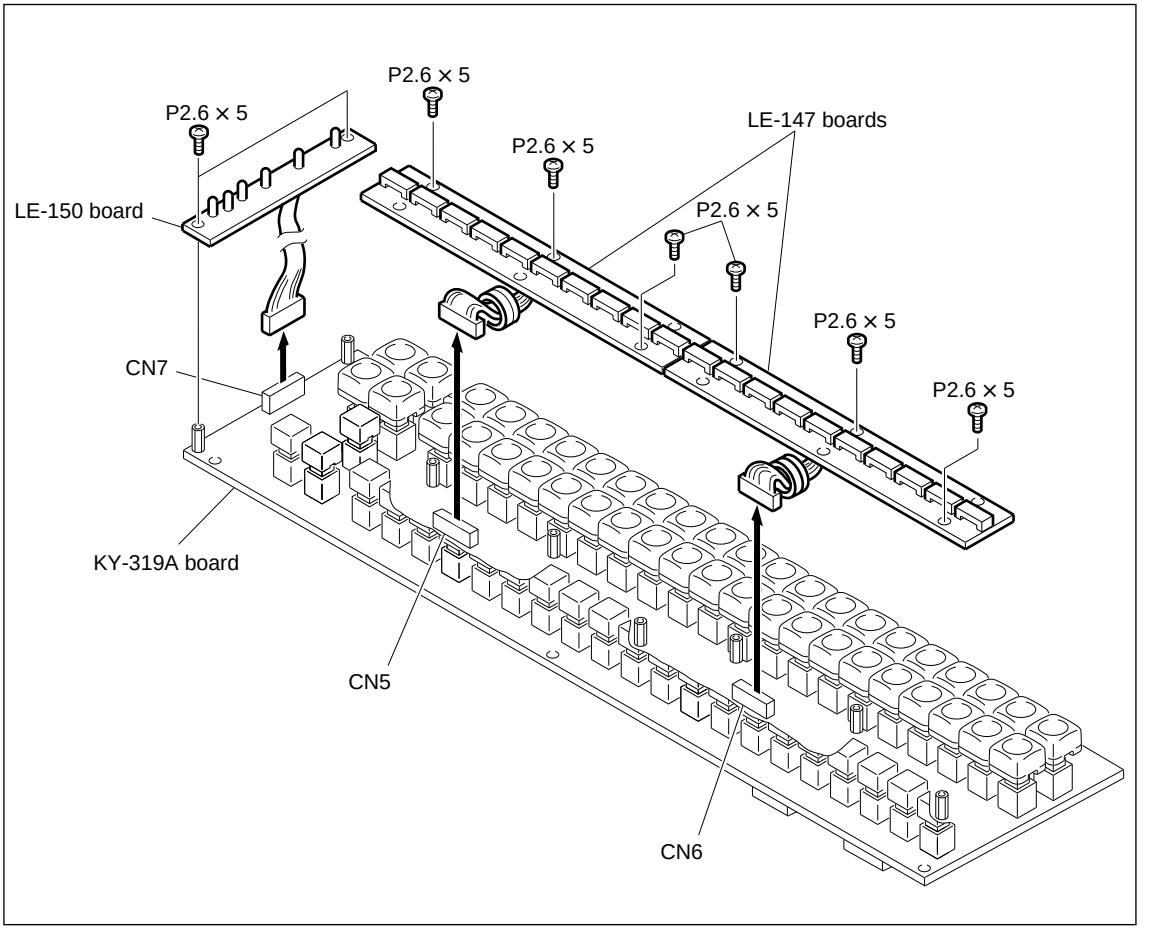
(1) Open the panel. (Refer to the section 1-2-1.)
(2) Turn off the power switch in the control panel. (Refer to the section 1-2-2.)
(3) Remove the KY-389A, 389B or 390 board.
(Refer to "9. KY-389A, 389B or 390 Board" in this section.)
(4) Remove the three screws securing the LE-147, 148 or 180 board.
(5) Disconnect the following connector on the KY-389A, 389B or 390 board and remove the LE-147, 148 or 180 board.
For LE-147 or 180 Board : CN5 on the KY-389A, 389B or 390 board
For LE-148 Board : CN6 on the KY-389A, 389B or 390 board



(6) Install the LE-147, 148 or 180 board in the reverse order of the procedures (1) through (5).

24. LE-147 or 150 Board (BKDS-7025/7026)

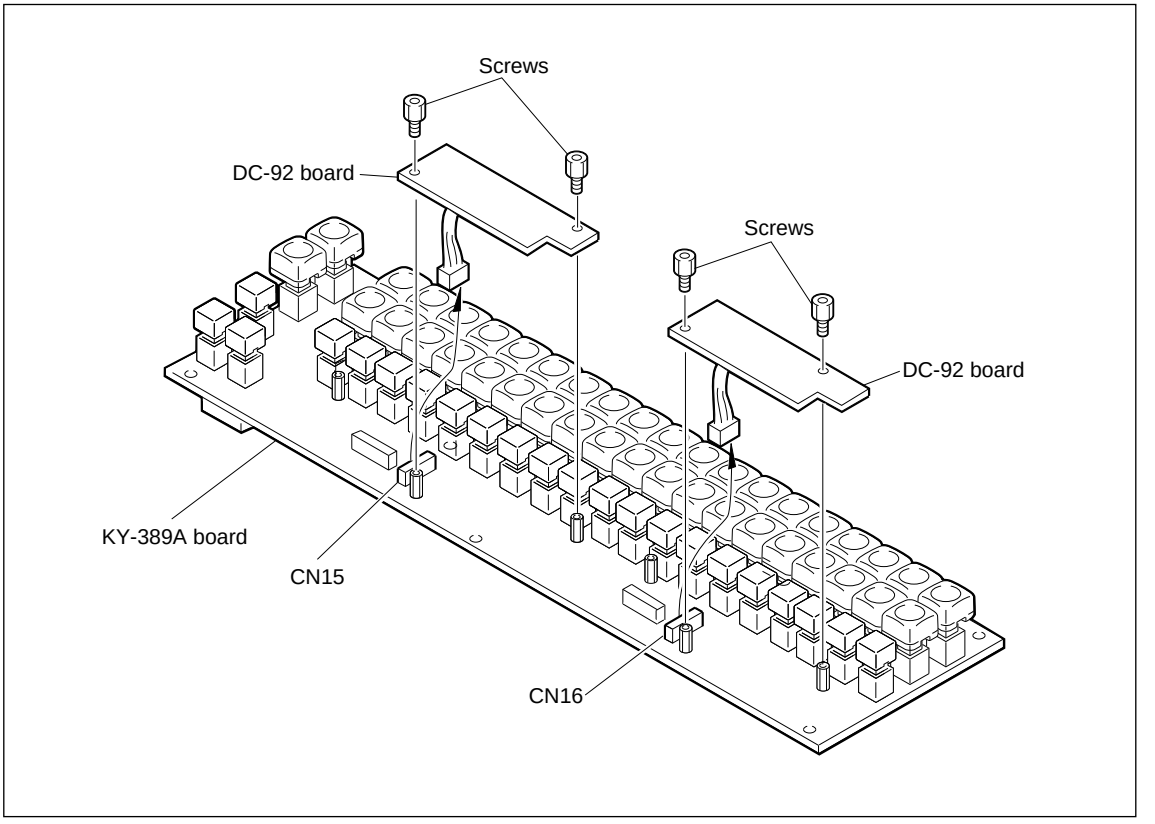
(1) Open the panel. (Refer to the section 1-2-1.)
(2) Turn off the power switch in the control panel. (Refer to the section 1-2-2.)
(3) Remove the KY-319A or 332 board. (Refer to "13. KY-319A, 319B or 332 Board" in this section.)
(4) Remove the screws securing the LE-147 or 150 board.
For LE-147 Board : 3 pcs
For LE-150 Board : 2 pcs
(5) Disconnect the following connector on the KY-319A or 332 board and remove the LE-147 or 150 board.
For LE-147 Board : Either CN5 or CN6 on the KY-319A board, or CN6 on the KY-332 board
For LE-150 Board : CN7 on the KY-319A board



(6) Install the LE-147 or 150 board in the reverse order of the procedures (1) through (5).

25. DC-92 Board (BKDS-7002)

(1) Open the panel. (Refer to the section 1-2-1.)
(2) Turn off the power switch in the control panel. (Refer to the section 1-2-2.)
(3) Remove the KY-389A, 389B or 390 board.
(Refer to "9. KY-389A, 389B or 390 Board" in this section.)
(4) Remove the LE-147, 148 or 180 board. (Refer to "23. LE-147, 148 or 180 Board" in this section.)
(5) Remove the two screws securing the LE-147, 148 or 180 board.
(6) Disconnect the one connector (CN15 or CN16) on the KY-389A, 389B or 390 board and remove the DC-92 board.



(7) Install the DC-92 board in the reverse order of the procedures (1) through (6).

1-2-6. Replacement of Backup Memory IC

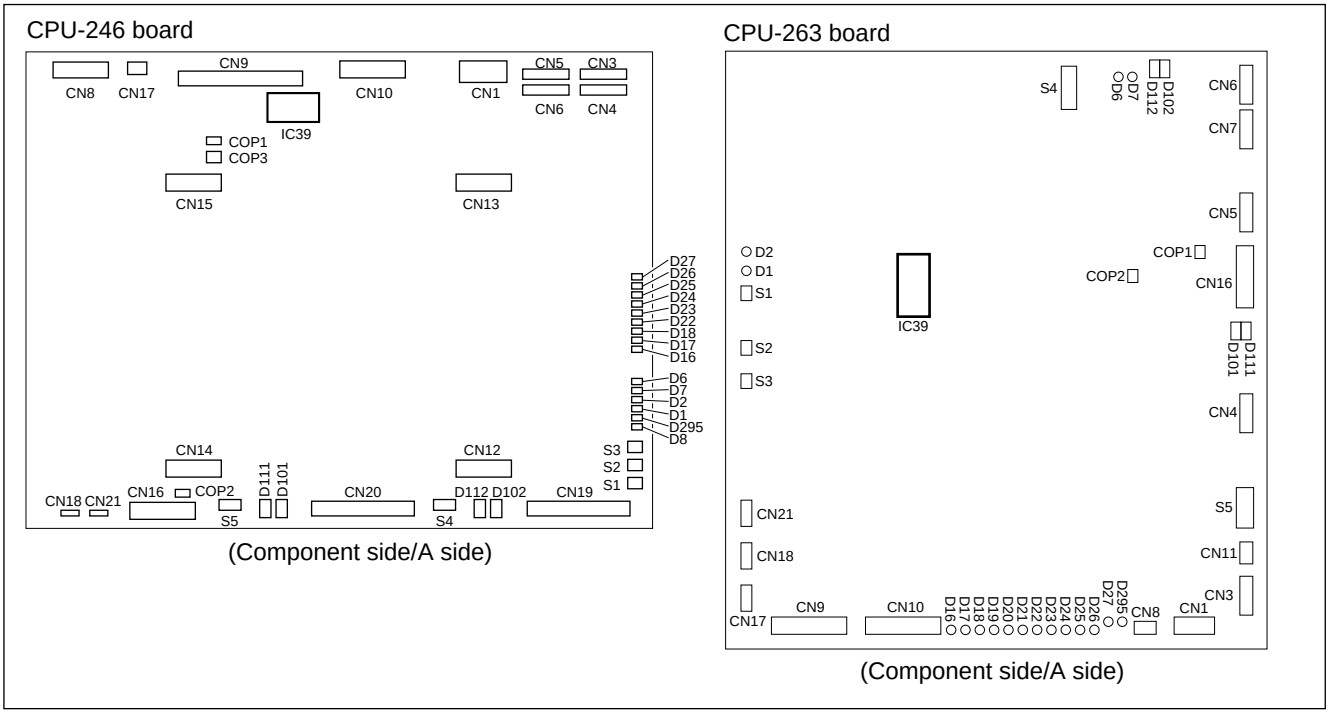
If the backup memory IC (IC39/CPU-246 board (BKDS-7015) or the CPU-263 board (BKDS-7025/7026)) is NG when the memory is checked at power-on, replace the IC as follows. To replace the IC, be sure to use the specified IC.

Replacement Part

CPU-246/263 Board (IC39)
Description : M48Z35Y-70PC1 (C-MOS 256K-BIT NON-VOLATILE STATIC RAM)
Part number : 8-759-530-40

Replacement Procedures

(1) Open the panel. (Refer to the section 1-2-1.)
(2) Turn off the power switch in the control panel. (Refer to the section 1-2-2.)
(3) Remove the IC (IC39) from the IC socket on the CPU-246 board or the CPU-263 board.
(4) Install a new IC in the reverse order of the procedures (1) through (3).



1-2-7. Spare Parts

This section describes the information for spare parts.
In case of ordering replaceable parts such as mounted circuit boards and major components, refer to the part numbers and descriptions that are listed in this section.

Spare Parts

Description	Part No.
Mounted Circuit Board, CN-1143	A-8269-512-A
Mounted Circuit Board, CN-1143B	A-8315-951-A
Mounted Circuit Board, CN-1148	A-8269-521-A
Mounted Circuit Board, CN-1149	A-8312-655-A
Mounted Circuit Board, CN-1150	A-8312-656-A
Mounted Circuit Board, CPU-246	A-8312-653-A
Mounted Circuit Board, CPU-263	A-8315-698-A
Mounted Circuit Board, DC-92 (BKDS-7002)	A-8312-659-A
Mounted Circuit Board, IF-629 (BKDS-7075)	A-8273-694-A
Mounted Circuit Board, KY-318A	A-8269-482-A
Mounted Circuit Board, KY-318B	A-8269-484-A
Mounted Circuit Board, KY-319A	A-8269-488-A
Mounted Circuit Board, KY-319B	A-8269-490-A
Mounted Circuit Board, KY-320	A-8269-498-A
Mounted Circuit Board, KY-321	A-8269-500-A
Mounted Circuit Board, KY-323	A-8269-504-A
Mounted Circuit Board, KY-324	A-8269-506-A
Mounted Circuit Board, KY-328 (BKDS-7030)	A-8273-689-A
Mounted Circuit Board, KY-329 (BKDS-7031)	A-8273-691-A
Mounted Circuit Board, KY-331	A-8269-494-A
Mounted Circuit Board, KY-332	A-8269-496-A
Mounted Circuit Board, KY-367	A-8272-417-A
Mounted Circuit Board, KY-389A	A-8312-632-A
Mounted Circuit Board, KY-389B	A-8312-634-A
Mounted Circuit Board, KY-390	A-8312-636-A
Mounted Circuit Board, KY-391	A-8312-638-A
Mounted Circuit Board, KY-392	A-8312-640-A
Mounted Circuit Board, KY-393 (BKDS-7340)	A-8312-642-A
Mounted Circuit Board, KY-394	A-8312-644-A
Mounted Circuit Board, KY-395A	A-8312-646-A
Mounted Circuit Board, KY-395B	A-8312-648-A
Mounted Circuit Board, KY-411	A-8315-729-A
Printed Circuit Board, CN-1509	1-664-836-11
Printed Circuit Board, LE-142 (BKDS-7340)	1-658-284-11
Printed Circuit Board, LE-143	1-658-285-11
Printed Circuit Board, LE-144	1-658-286-11
Printed Circuit Board, LE-145	1-658-287-11

Spare Parts

Description	Part No.
Printed Circuit Board, LE-146	1-658-288-11
Printed Circuit Board, LE-147 (BKDS-7002)	1-658-289-11
Printed Circuit Board, LE-148 (BKDS-7002)	1-658-290-11
Printed Circuit Board, LE-150	1-658-291-11
Printed Circuit Board, LE-180 (BKDS-7002)	1-664-830-11
EL Display Unit	1-466-954-11
Floppy Disk Drive Unit	1-467-692-11
Rotary Encoder	1-466-955-11
Fader Assembly	A-8269-728-A
BKDS-7001, IF-523	Option
BKDS-7033, KY-395C	Option
BKDS-7075, IF-629	Option
BKDS-7090, Redundant Power Supply Unit	Option
BKDS-7091, Redundant Power Supply Unit	Option

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Section 2
Replacement of Main Parts

WARNING

To avoid shock hazards and/or damage to the mounted circuit boards, be sure to turn off the power switch, and then turn off the breaker at the outside of DVS-7200A and BKDS-7015 or unplug the power cord before replacing the main parts.

2-1. DVS-7200A

2-1-1. Replacement of Fan on the Rear Panel

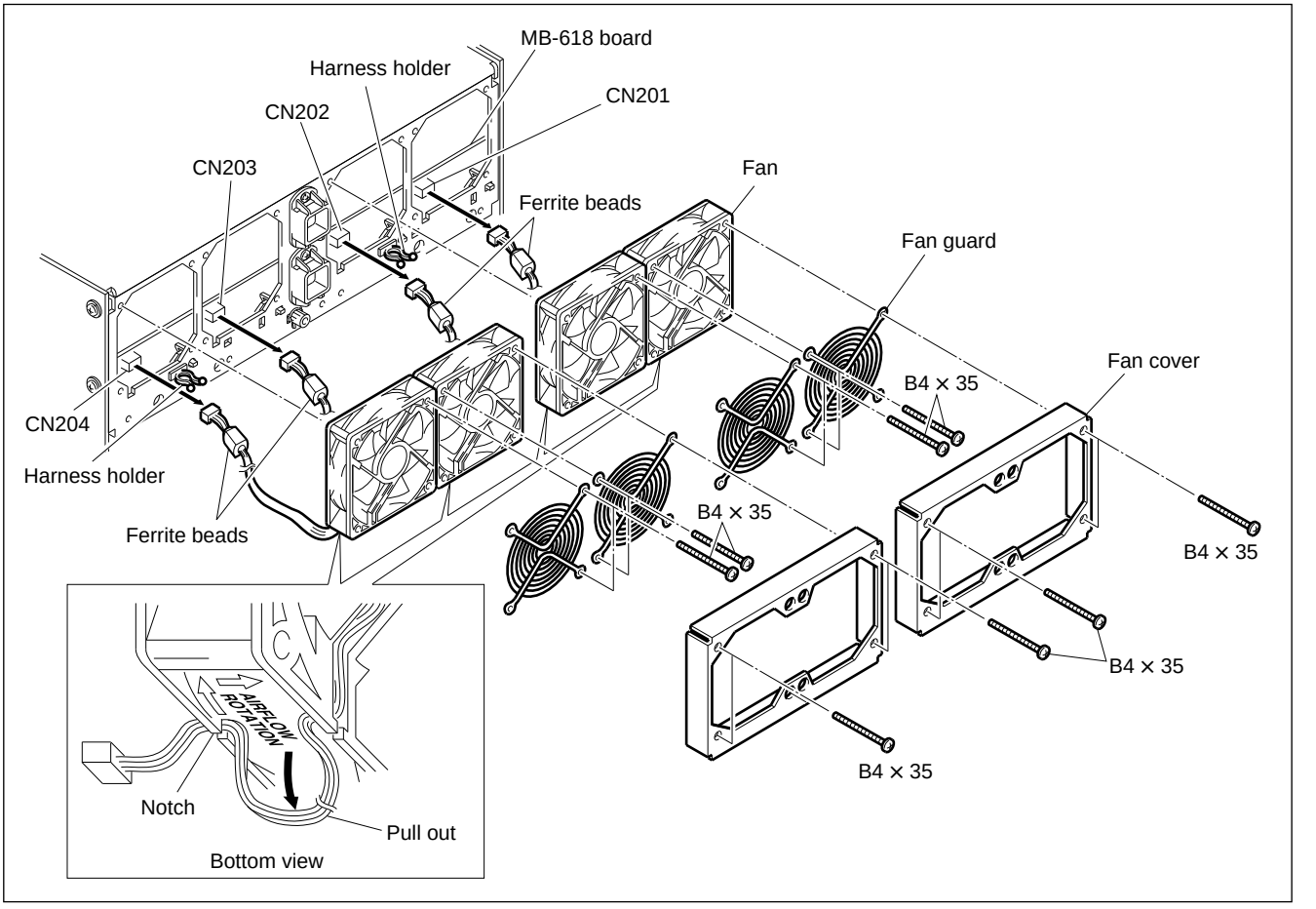
If the fan stops under the normal conditions, the control panel indicates the alarm on the display panel. If indicated, replace the fan.
And if the fan is used over a prolonged period, the rotation speed getting low by wearing. If the unit is continuously used, periodically replace it about every two years.

Note

For the replacement of the fan in the power unit, please contact to your Sony's sales/service office.

(For the replacement procedures of the fan on the rear panel, refer to the next page.)

(1) Remove the four screws and the fan cover.
(2) Remove the two screws securing the fan to replace, and remove the fan guard.
(3) Disconnect the following connector and remove the fan.
For the 1st fan from the left side : CN204
For the 2nd fan from the left side : CN203
For the 3rd fan from the left side : CN202
For the 4th fan from the left side : CN201
(4) Remove the ferrite bead.



(5) Install a new fan in the reverse order of the procedures (1) through (4).

Note

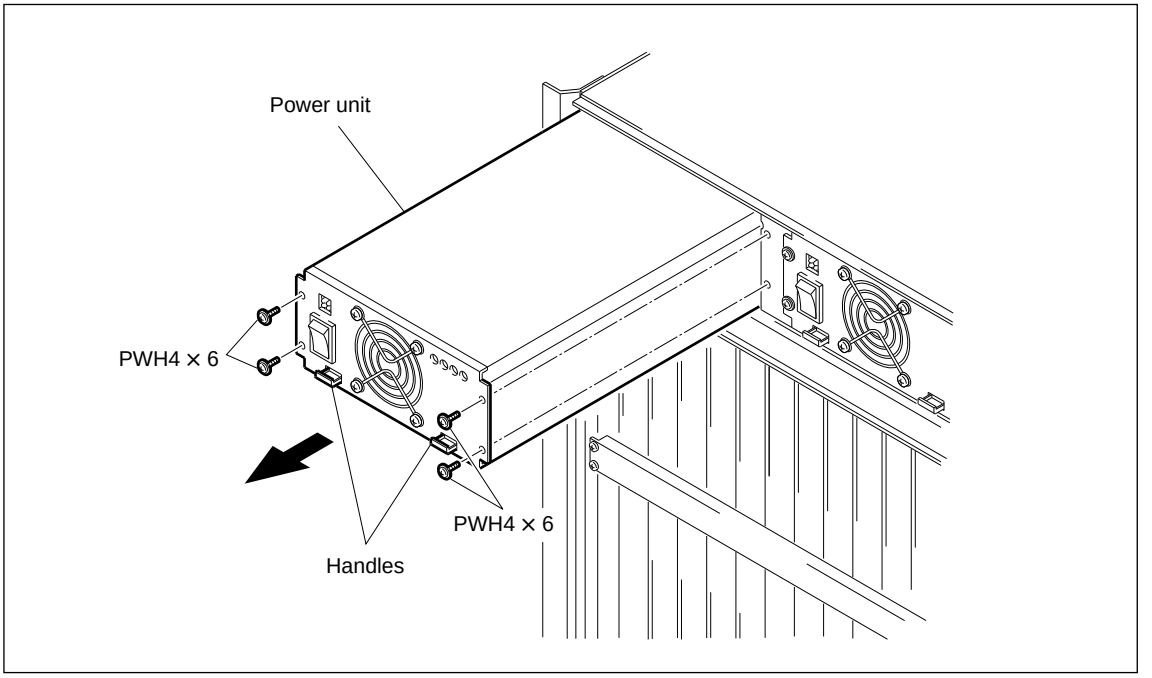
- When installing the fan, take care the direction of the airflow.
- When installing the fan, put the harness in the notch of the fan shown in the figure. After installing the fan, pull out the harness in the direction of the arrow and secure the harness to the harness holder.
  If loosening the harness, the harness causes that be caught in the fan when turning the fan.
- If it is hard to secure the fan cover by the screws, once loosen the screws securing the fan.

2-1-2. Replacement of Power Unit

WARNING

Allow for more than five minutes interval after turning the power off, remove the power unit.
To avoid shock hazards, never remove the power unit just after turning the power off.

(1) Remove the front panel. (Refer to the section 1-1-1.)
(2) Remove the four screws securing the power unit.
(3) Hold the handles and pull out the power unit from the unit.



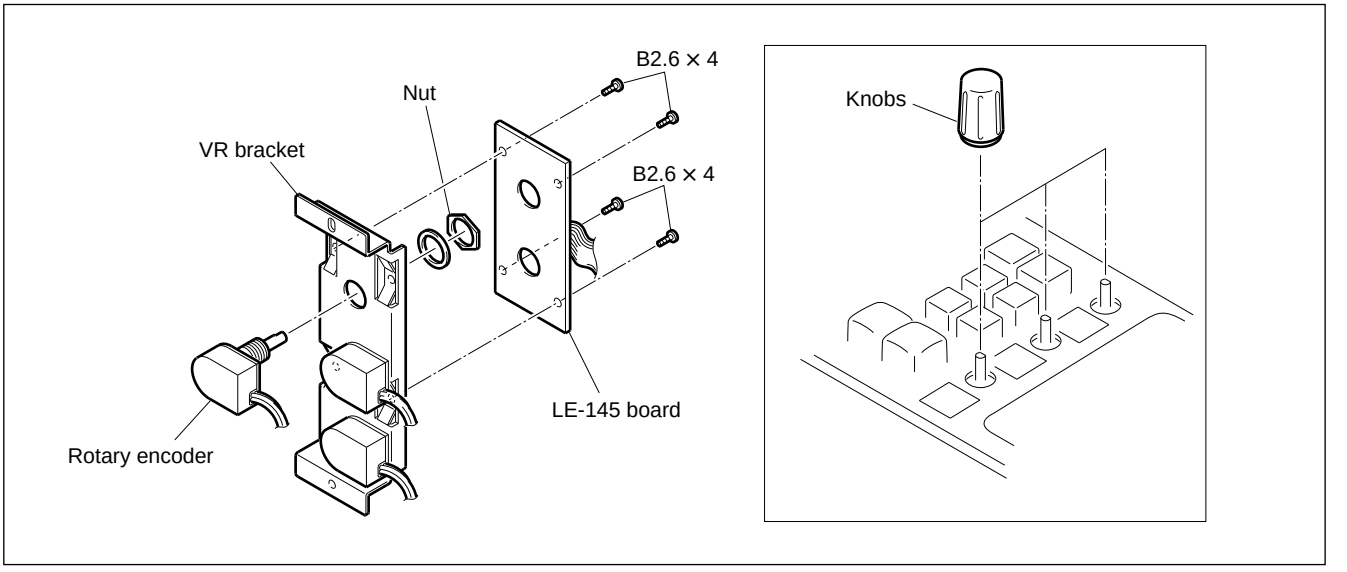
(4) Install a new power unit in the reverse order of the procedures (1) through (3).

2-2. Control Panel

2-2-1. Replacement of Rotary Encoder

1. Main Panel (BKDS-7025/7026)

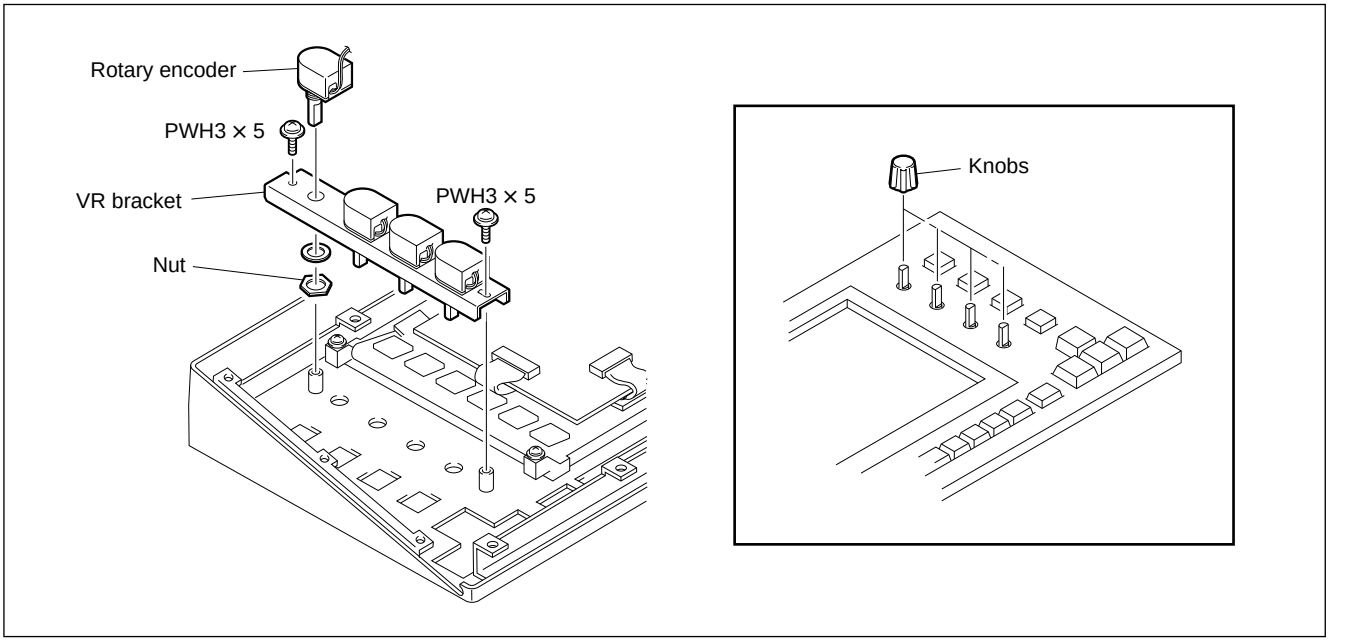
(1) Remove the three knobs near the rotary encoder to replace.
(2) Open the panel. (Refer to the section 1-2-1.)
(3) Turn off the power switch in the control panel. (Refer to the section 1-2-2.)
(4) Remove the LE-145 board. (Refer to "21. LE-145 Board" in the section 1-2-5.)
(5) Remove the nut of the rotary encoder to replace.



(6) Install a new rotary encoder in the reverse order of the procedures (1) through (5).

2. Display Panel (BKDS-7015)

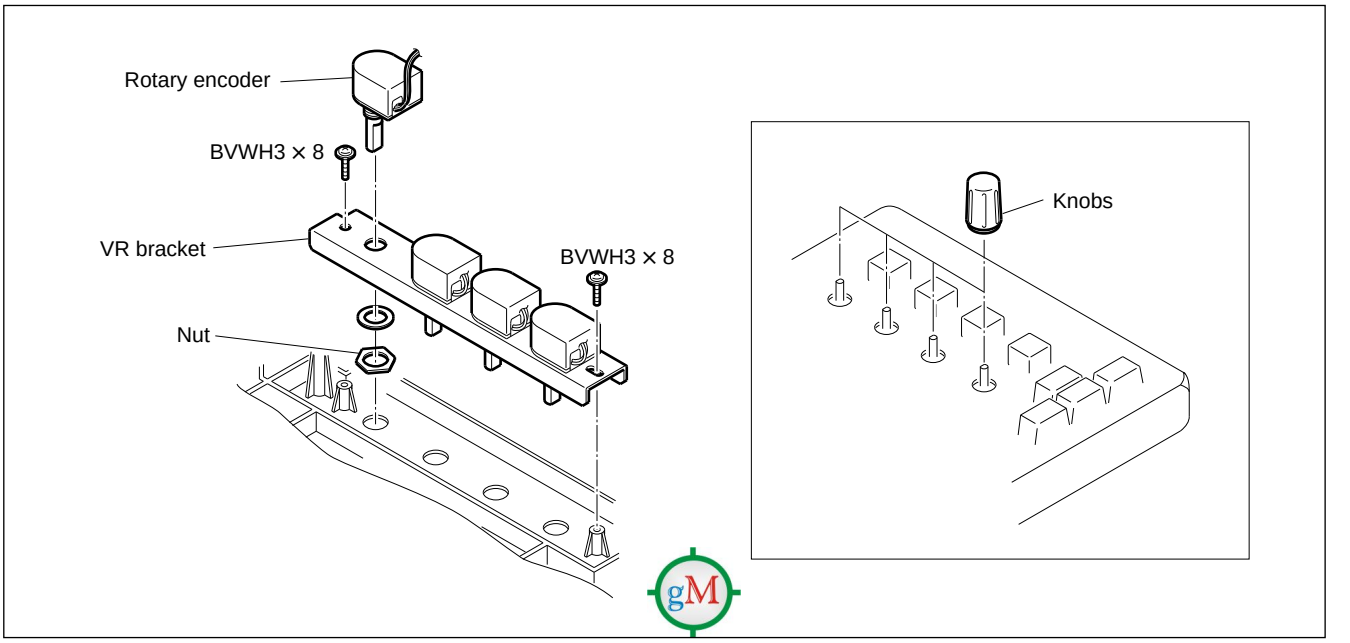
(1) Remove the four knobs.
(2) Open the panel. (Refer to the section 1-2-1.)
(3) Turn off the power switch in the control panel. (Refer to the section 1-2-2.)
(4) Remove the KY-394 board. (Refer to "11. KY-394 Board" in the section 1-2-5.)
(5) Remove the two screws and the VR bracket.
(6) Remove the nut of the rotary encoder to replace.



(7) Install a new rotary encoder in the reverse order of the procedures (1) through (6).

3. Display Panel (BKDS-7025/7026)

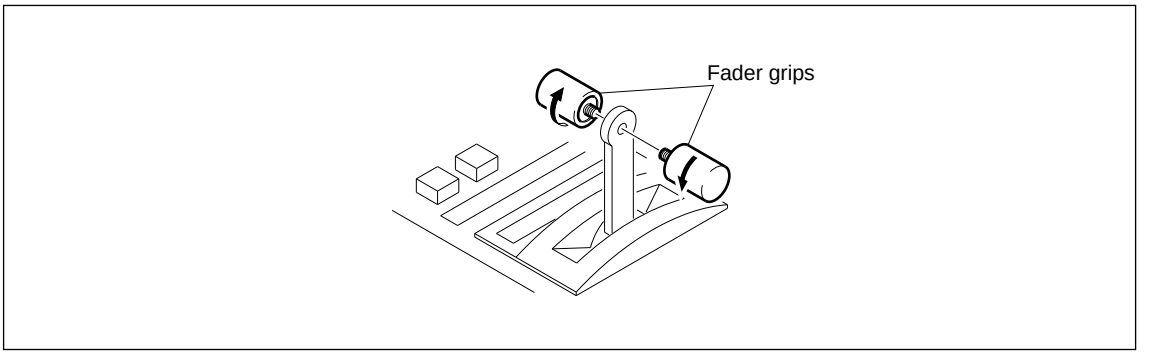
(1) Remove the four knobs.
(2) Remove the exterior part of the display panel. (Refer to the section 1-2-3.)
(3) Remove the KY-323 board. (Refer to “15. KY-323 Board” in the section 1-2-5.)
(4) Remove the two screws and the VR bracket.
(5) Remove the nut of the rotary encoder to replace.



(6) Install a new rotary encoder in the reverse order of the procedures (1) through (5).

2-2-2. Replacement of Fader

(1) Turn the fader grip of the fader to replace in the direction of the arrow and remove it.

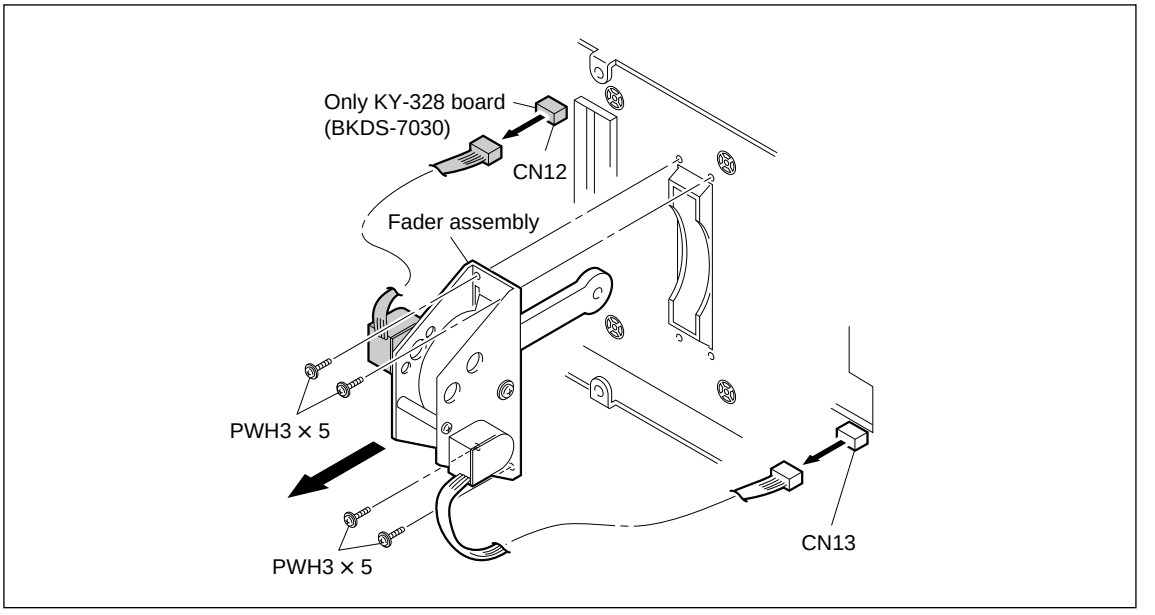


(2) Open the panel. (Refer to the section 1-2-1.)
(3) Turn off the power switch in the control panel. (Refer to the section 1-2-2.)
(4) When removing the fader (BKDS-7030) with installed to the adaptor box (BKDS-7075), remove the two screws and the AD panel. (Refer to "2. Adaptor Box" in the section 1-2-3.)
When removing the fader in the main panel, remove the CPU-246 board or the CPU-263 board. (Refer to "5. CPU-246 Board" or "6. CPU-263 Board" in the section 1-2-5.)

Note

When removing the fader on the KY-391 board, it is not necessary to carry out the step (4).

(5) Disconnect the one connector.
For KY-320, 321, 367, 391, 392 or 411 Board : CN13
For KY-328 Board : CN12
(6) Remove the four screws securing the fader to replace.

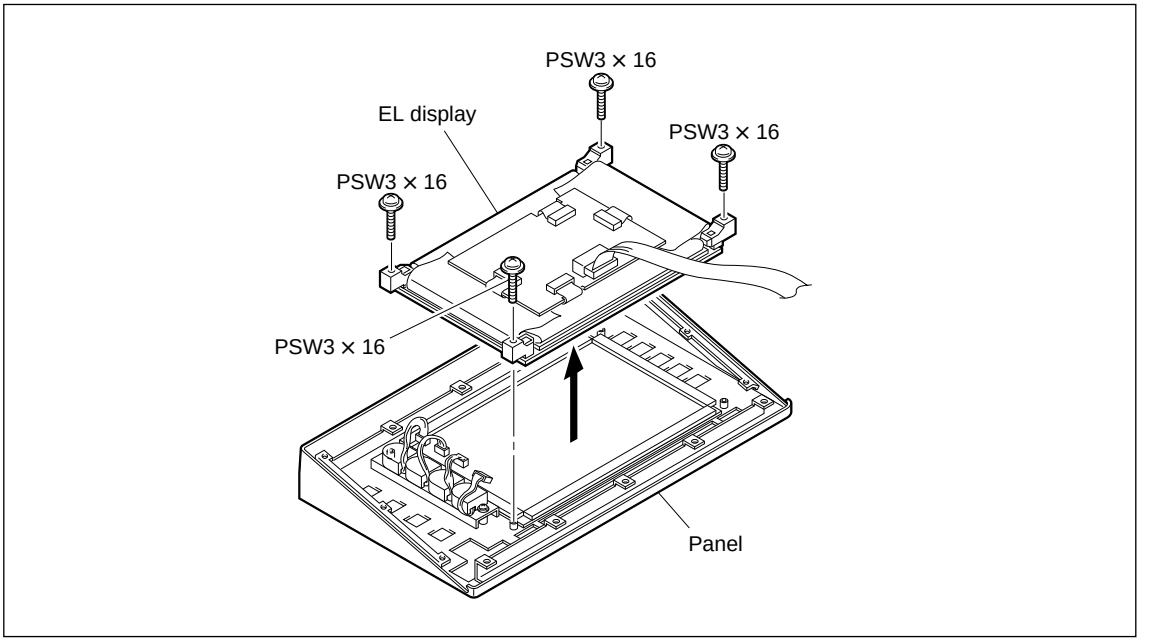


(7) Install a new fader in the reverse order of the procedures (1) through (6).

2-2-3. Replacement of EL Display

1. BKDS-7015

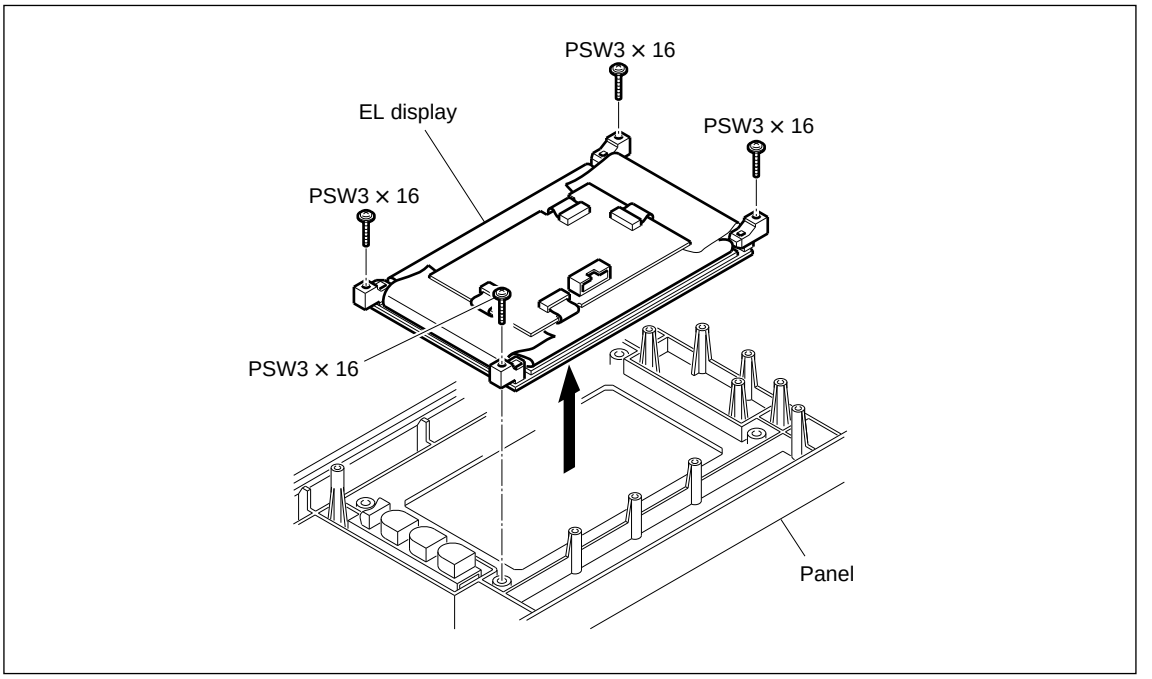
(1) Open the panel. (Refer to the section 1-2-1.)
(2) Turn off the power switch in the control panel. (Refer to the section 1-2-2.)
(3) Remove the KY-394 board. (Refer to "11. KY-394 Board" in the section 1-2-5.)
(4) Remove the four screws and the EL display.



(5) Install a new EL display in the reverse order of the procedures (1) through (4).

2. BKDS-7025/7026

(1) Remove the exterior part of the display panel. (Refer to the section 1-2-3.)
(2) Remove the KY-323 board. (Refer to “15. KY-323 Board” in the section 1-2-5.)
(3) Remove the four screws and the EL display.

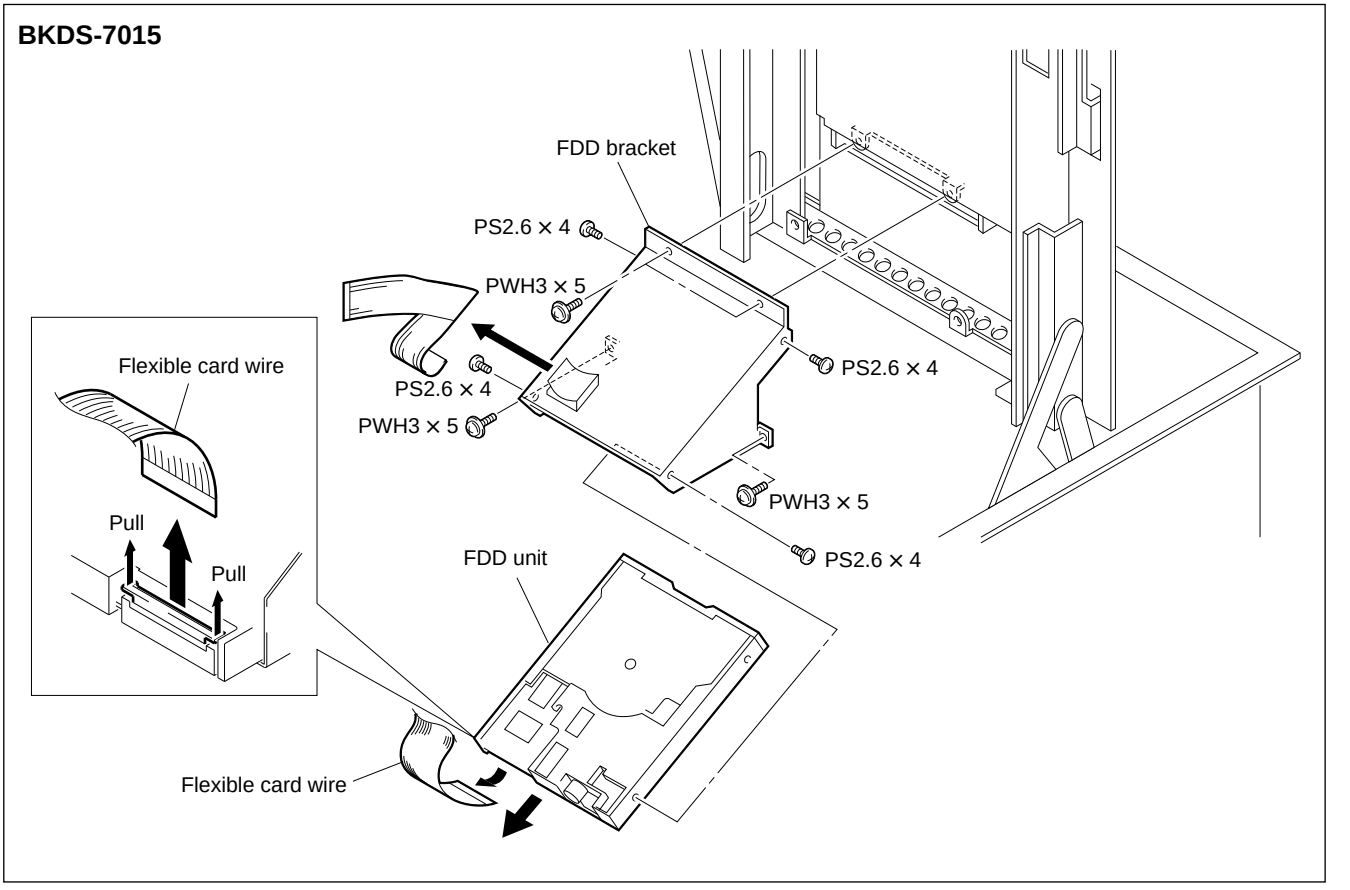


(4) Install a new EL display in the reverse order of the procedures (1) through (3).

2-2-4. Replacement of FDD (Floppy Disk Drive) Unit

(1) Open the panel. (Refer to the section 1-2-1.)
(2) Turn off the power switch in the control panel. (Refer to the section 1-2-2.)
(3) Remove the four screws (PWH3 × 5) and the FDD unit installing with the FDD bracket.
(4) Disconnect the flexible card wire of the FDD unit.
(5) Remove the four screws (PS2.6 × 4) and the FDD unit from the FDD bracket.

BKDS-7015



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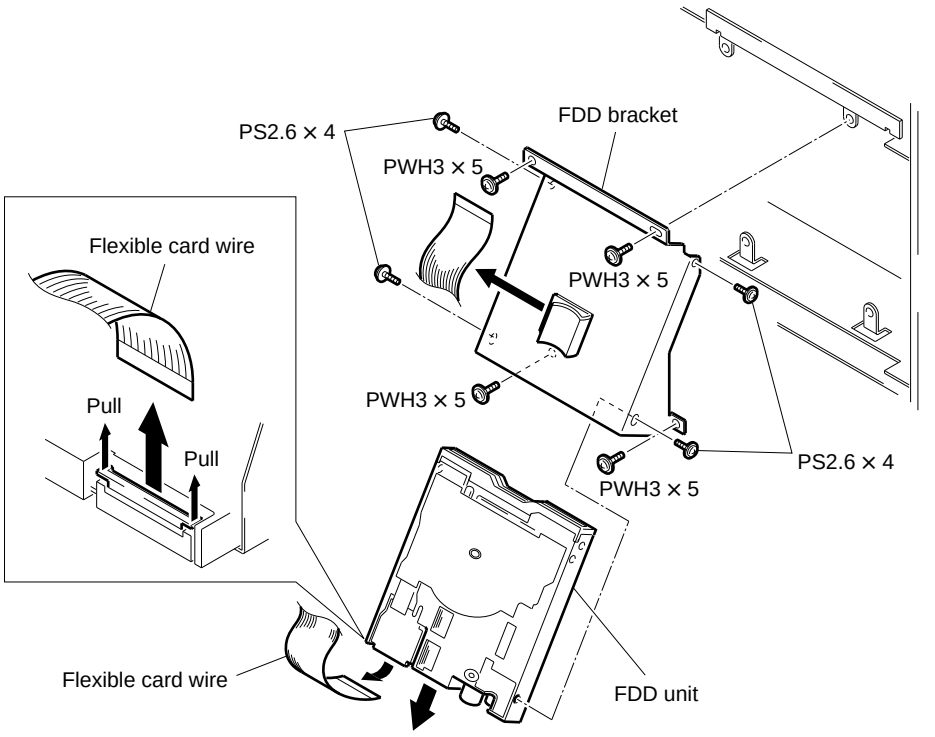
BKDS-7025/7026



(6) Install a new FDD unit in the reverse order of the procedures (1) through (5).

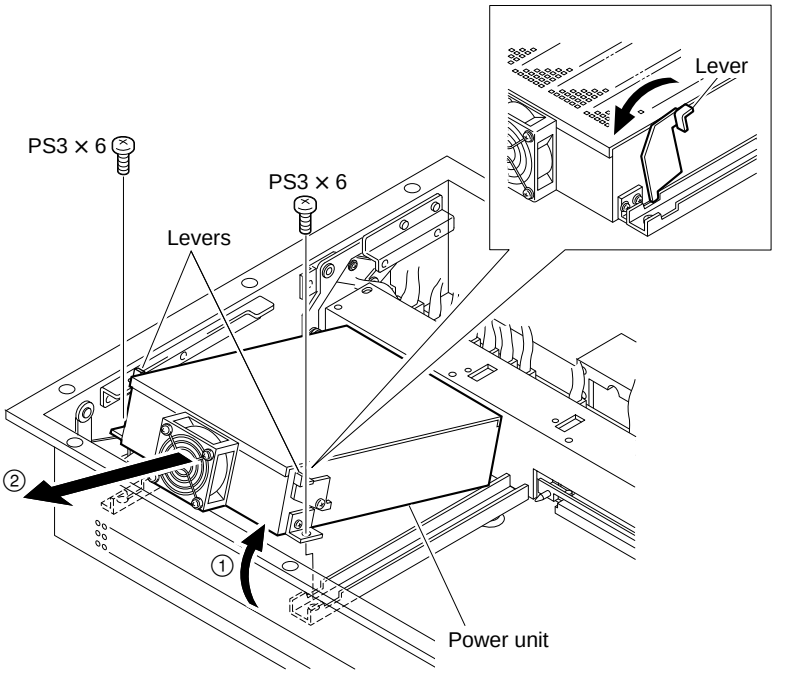
2-2-5. Replacement of Power Unit

WARNING

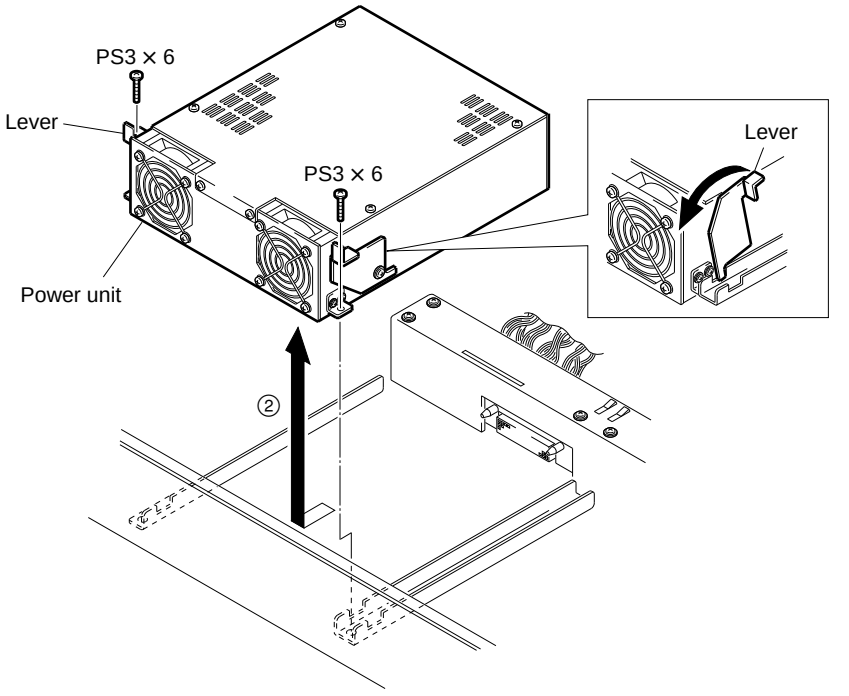
Allow for more than five minutes interval after turning the power off, remove the power unit.
To avoid shock hazards, never remove the power unit just after turning the power off.

(1) Open the panel. (Refer to the section 1-2-1.)
(2) Turn off the power switch in the control panel. (Refer to the section 1-2-2.)
(3) Remove the two screws securing the power unit.
(4) Tilt the levers at both sides of the power unit in the direction of the arrow.
(5) Lift up the power unit in the direction of the arrow ①. (Only for BKDS-7015)
(6) Remove the power unit in the direction of the arrow ②.

BKDS-7015



BKDS-7025/7026



(7) Install a new power unit in the reverse order of the procedures (1) through (6).

Section 3
Troubleshooting (Control Panels)

3-1. Self Diagnostics Mode (BKDS-7015)

The self diagnostics consisting of the following ten menu items can be performed by connecting the terminals in the section 3-3-1 and start the self diagnostics mode. Run the tests in each menu.

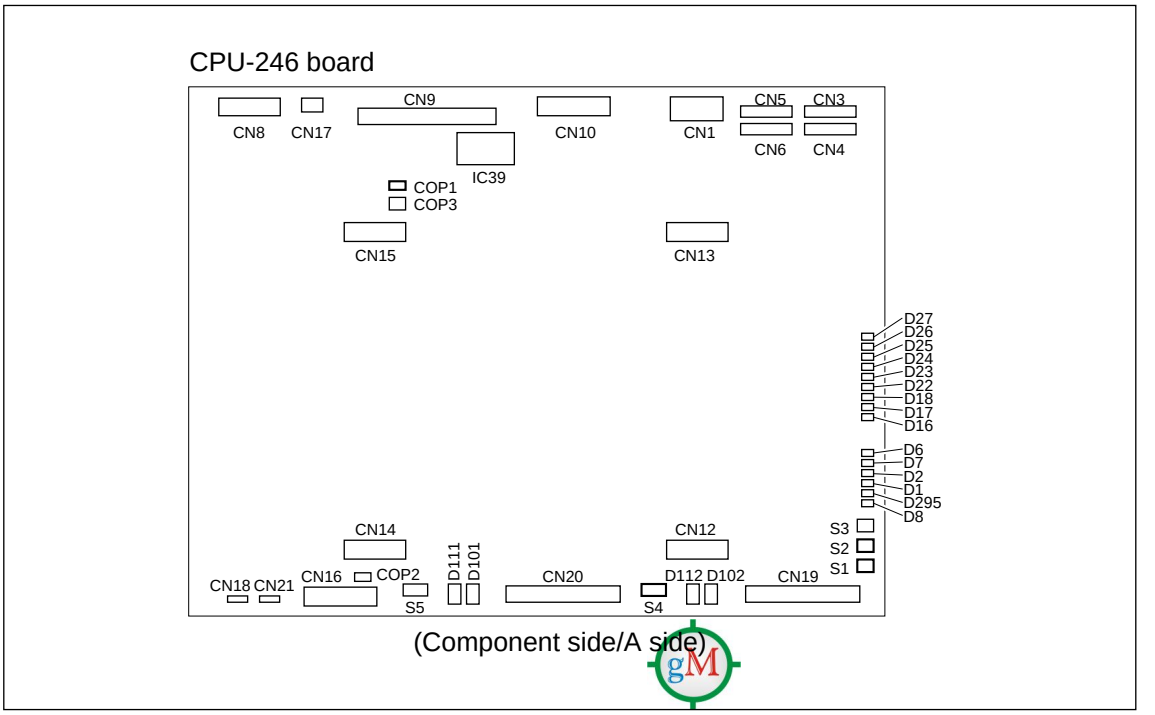
(1) "1. Memory test" Menu
Tested the peripheral memory of the main CPU and checked the memories function.
(2) "2. PIO test" Menu
Tested the PIO (IC67, IC70) and checked the PIO function.
(3) "3. GPI test" Menu
Tested the interface of the GPI connector on the connector panel of this unit and checked the interface functions.
(4) "4. FDC test" Menu
Tested the floppy disk controller (FDC) and the floppy disk drive (FDD), checked the disk condition.
(5) "5. Timer & Interrupt test" Menu
Tested the CPU-246 board built-in timer and the interrupt controller, and checked they function. For this test, DVS-7200A is needed.
(6) "6. EL panel test" Menu
Tested the EL display and the control circuit, and checked the displayed contents.
(7) "7. And test" Menu
Checked the displayed contents on the alphanumeric display.
(8) "8. Communication test" Menu
Tested the communication of the communication ports and checked their function.
(9) "9. Buzzer test" Menu
Checked that the buzzer sounds.
(10)"10. SUB CPU test" Menu
Tested the sub CPU which controls lighting of the LEDs, and which is read the switch data and volume control data. And checked the sub CPU functions.
(11)"11. MISC test" Menu
Used at the factory.

Use "Q. Quit" to exit the self diagnostics menu.

3-2. Switch Settings on the CPU-246 Board and LEDs Description (BKDS-7015)

Note

The addresses on the boards are shown by ( ) marks.



COP1 (E3) :
This is used only for service and is opened under normal status.

S1 (R11) : RESET switch
This switch is used only for service. If pressing, the SYSTEM is reset and is restarted.

S2 (R11) : ABORT switch
This switch is used for the adjustment in the factory.

S4 (K11) : Main CPU select switch
Switch S4 sets the operation of the main CPU. After setting it, press the RESET switch or turn off the main power switch and turn it on again.

Default setting when shipped from the factory : All OFF

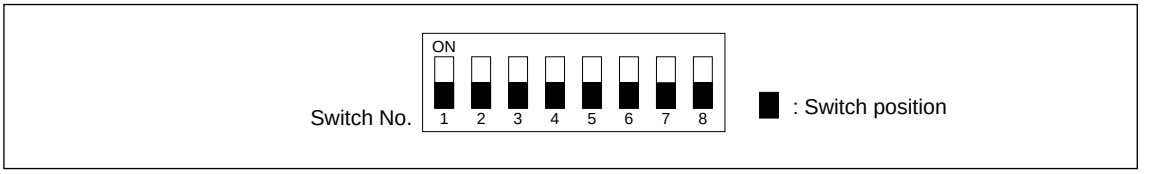
Note
■ indicates the knob position.

For Starting Up of the Control Panels

This unit can be update the operating soft using the floppy disk.
The program that is loaded from the floppy disk is stored in the flash memory on the CPU-246 board.
By the selection of the switch S4, this unit is prepared the following three procedures for the starting up of the control panels.

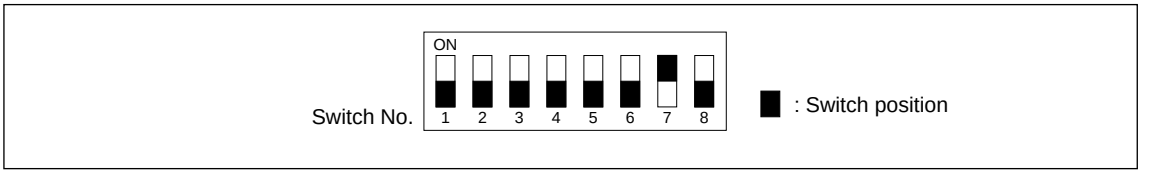
1. Normal Mode

Under normal operation, start up the control panel in this mode.



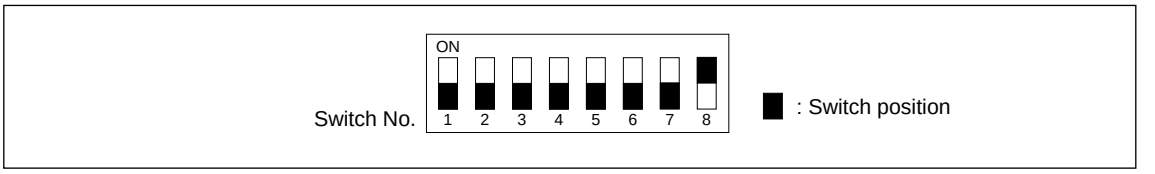
Note
Because this mode is not confirmed the contents of the flash memory, a malfunction occurs when the program is not written in the flash memory and the contents of the flash memory are wrong.
If something is wrong, re-program to the flash memory referring to “2. Add-on Mode of Flash Memory Test” and “3. Request Mode of Down Load”.

2. Add-on Mode of Flash Memory Test



This mode is differ from the “1. Normal Mode”. This mode is tested the contents of the flash memory, and is carried out the main program only when the contents of the flash memory are correct.
If the program is not written in the flash memory or the contents of the flash memory are wrong, the menu that is requested to re-program is displayed.
After re-programming, select the select switch S4 to the mode of the “1. Normal Mode” and re-turn on the power.

3. Request Mode of Down Load



Regardless of the contents of the flash memory, the menu that is requested to re-program using the floppy disk is displayed.

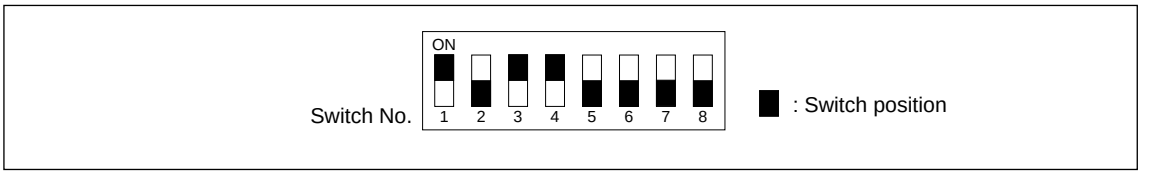
The contents of the flash memory are tested in the “2. Add-on Mode of Flash Memory Test”, but the test passes in a low probability if they are wrong, and a malfunction may occur.

Note

When the control panels can not be started up in both mode of the “1. Normal Mode” and “2. Add-on Mode of Flash Memory”, carry out this mode.

After re-programming, select the select switch S4 to the mode of the “1. Normal Mode” and re-turn on the power.

Test Mode Using a VT Terminal



If a VT terminal is connected to the “TERMINAL 1” connector on the connector panel, all trouble diagnosis of the unit can be carried out. For the connection and the contents of the test, refer to the “3-3-2. Connecting the test terminal with connector to this unit”.

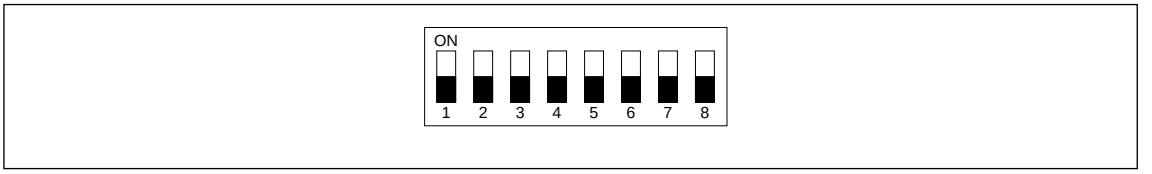
S3 (R10) : SUB ABORT switch
This switch is used for the adjustment in the factory. If pressing this switch after selecting the S5 switch on the CPU-246 board to the SUB CPU flash memory access protection mode, erase the content of the flash memory for stored-program.

S5 (F11) : SUB CPU switch
This switch is used to select the operation mode of SUB CPU.

Selections in the factory : All OFF

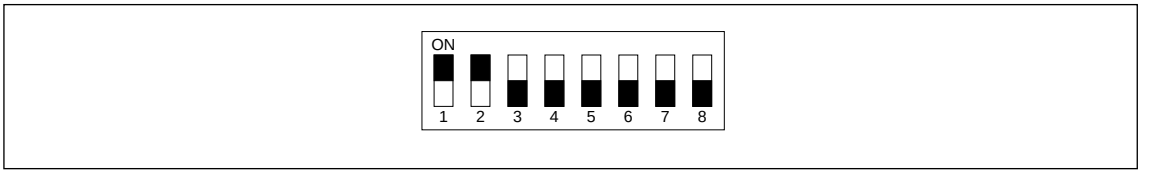
1. Selections when operating under normal status

The selections for normal operation



2. Sub CPU Flash Memory Access Inhibit Mode

In this mode, the sub CPU runs using only the program stored in the ROM, regardless of the state of the flash memory. The sub CPU access to the flash memory is inhibited.



D1 (Red color) (R9) : RUN
Lights when the MAIN CPU is operating.

D2 (Red color) (R9) : HALT
Lights when the MAIN CPU is in the HALT state.

D7 (Red color) (R9) : M1
Lights when the reference signal is not transmitted from the DVS-7200A.

D8 (Red color) (R9) : M0
Lights if the parameter read process is not executed with the DVS-7200A.

D16 (Red color) (R7) : CH0
Blinks when the control signal from the DVS-7200A is received.

D17 (Red color) (R7) : CH1
Blinks when receiving the control signal from the equipment which is connected to the DME connector on the control panel.

D18 (Red color) (R7) : SIO0
This LED indicates the status of the CPU (IC86 on the CPU-246 board) which controls the two ports of SWITCHER and DME on the connector panel.
Lights off : The CPU is operating normally.
Lights : The CPU is not started up correctly.
Blinks : The dual port RAM (IC85 on the CPU-246 board), which is controlled by the CPU, is abnormal.

D22 (Red color) (R7) : CH4
Blinks when receiving the control signal from the equipment which is connected to the REMOTE 1 connector on the connector panel.

D23 (Red color) (R7) : CH5
Blinks receiving the control signal from the equipment which is connected to the REMOTE 2 connector on the connector panel.

D24 (Red color) (R7) : SI02
This LED indicates the status of the CPU (IC3 on the IF-523 board) which controls the two ports of REMOTE 1 and REMOTE 2 on the connector panel.
Lights off : The CPU is operating normally.
Lights : The CPU is not started up correctly.
Blinks : The dual port RAM, which is controlled by the CPU, is abnormal.

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D25 (Red color) (R6) : CH6
Blinks when receiving the control signal from the equipment which is connected to the REMOTE 3 connector on the connector panel.

D26 (Red color) (R6) : CH7
Blinks when receiving the control signal from the equipment which is connected to the REMOTE 4 connector on the connector panel.

D27 (Red color) (R6) : SI03
This LED indicates the status of the CPU (IC7 on the IF-523 board) which controls the two ports of REMOTE 3 and REMOTE 4 on the connector panel.
Lights off : The CPU is operating normally.
Lights : The CPU is not started up correctly.
Blinks : The dual port RAM, which is controlled by the CPU, is abnormal.

D101 and D111 (P1) : SUB
These LEDs are provided exclusively for maintenance service. They indicate the state of the sub CPU (IC142/CPU-246 board) which controls the LED on/off.

Display Using Area Surrounding LED

The area surrounding the LED indicates the status of the reference signal supplied from the DVS-7200A which is connected to the SWITCHER connector of the connector panel.

- The area flashes in the clockwise direction around the LED :
  The reference signal is in the 525 scanning line mode.
- The area flashes in the counter-clockwise direction around the LED :
  The reference signal is in the 625 scanning line mode.
- All indicators on the surrounding area are lit :
  There is no reference signal. This might be because the DVS-7200A main power is not turned on, or the reference signal is not connected correctly.

Other areas of the LED

These LEDs indicate the operation stasus of the SUB CPU and the memory.

D0 :
Lights : Flash memory (IC136 on the CPU-246 board) of the SUB CPU is damaged.
Lights off : Flash memory (IC136 on the CPU-246 board) of the SUB CPU is normal.

D1 :
Lights : Flash memory (IC136 on the CPU-246 board) of the SUB CPU is empty.
Lights off : Flash memory (IC136 on the CPU-246 board) of the SUB CPU is normal.

D2 :
Lights : The ROM (IC138 on the CPU-246 board), RAM (IC137 on the CPU-246 board) or dual port RAMs (IC134 or IC135 on the CPU-246 board) of the SUB CPU is abnormal.
Light off : The ROM (IC138 on the CPU-246 board), RAM (IC137 on the CPU-246 board) and dual port RAMs (IC134 or IC135 on the CPU-246 board) of the SUB CPU are normal.

D3 :
This LED lights when the system is running in SUB CPU flash memory access inhibit mode due to the S5 switch setting on the CPU-246 board.

D102 and D112 (M12) :
These LEDs indicate the result of checking the operating condition of the main CPU.

D295 (Green color) (R9) : POWER (+5V)
Lights when the power is supplied to the CPU-246 board.

D8 (Green color) (R9) : POWER (+12V)
Lights when the power is supplied to the CPU-246 board.

TP1 (H9) : CK40M
The 40 MHz square waves are visible when the system is operating normally.

TP2 (H9) : LCK40M
The 40 MHz square waves are visible when the system is operating normally. However, the waveform at this point has opposite polarity to that of TP1 on the CPU-246 board.

TP3 (R11) : RESET
The system reset signal is visible.

TP4 (H11) : AS
The AS signal which is generated by the main CPU (IC8 on the CPU-246 board) is visible.

TP5 (H11) : STERM
The STERM signal which is generated by the main CPU (IC8 on the CPU-246 board) is visible.

TP6 (G6) : DSACK0
The DSACK0 signal which is generated by the MDEC (IC10 on the CPU-246 board) is visible.

TP7 (G6) : DSACK1
The DSACK1 signal which is generated by the MDEC (IC10 on the CPU-246 board) is visible.

TP8 and TP9 (J11) : M3 and M2
Not used.

TP10 (K9) : VD
The vertical sync signal which is generated by the reference signal supplied from the DVS-7200A is visible. The sync signal of 16 ms rate is visible on the 525 scanning lines. The sync signal of 20 ms rate is visible on the 625 scanning lines.

TP11 (K9) : VDSNS
The “H” level appears when the reference signal from the DVS-7200A is received. The “L” level appears if the reference signal can not be received.

TP12 and TP13 (J11) : S0 and S1
Not used.

3-3. Troubleshooting (BKDS-7015)

3-3-1. Tools and Equipment Required for Troubleshooting

1. Test terminal with connector

Required for all test menus except “Communication test”.

(1) Terminal software
VT100 or VT100 equivalent

(2) Communication system

RS-232C

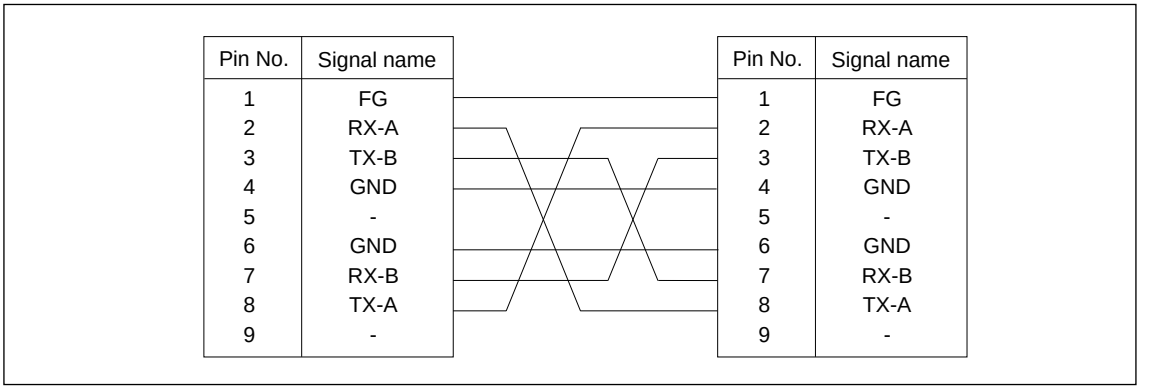
Baud rate	9600 bps
Data length	8 bits
Parity	—
Stop bit	1 bit

(3) Test connector to connect this unit
The pins-4 and -6 of the D-SUB 9-pin male connector are shorted, and pins-7 and -8 of it are shorted.
(Refer to the section 3-3-2.)

2. Tool cable for testing communication system

Required in the “Communication test” menu.

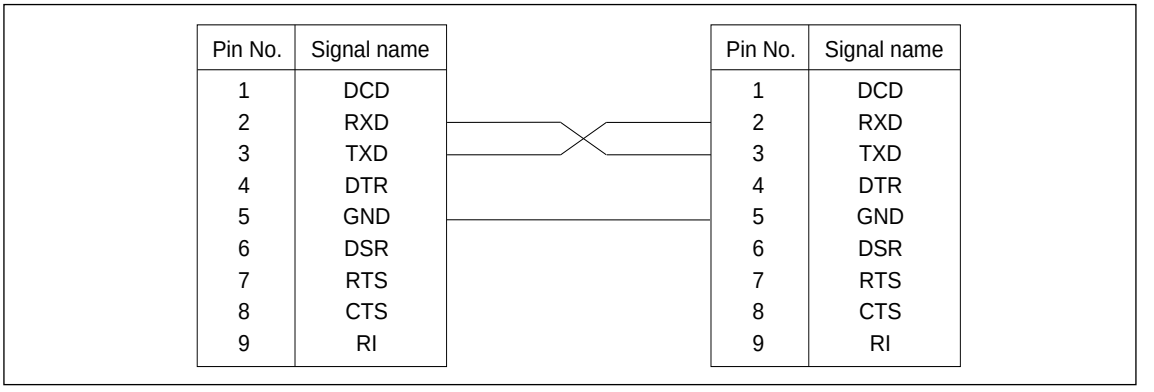
(1) Three tool cables for testing the RS-422A communication system
These tool cables are used to connect the “SWITCHER” and “DME” , “REMOTE 1” and “REMOTE 2” , “REMOTE 3” and “REMOTE 4” connectors on the connector panel. These tool cables which are shorted the two D-SUB 9-pin male connectors as shown below.



Pin No.	Signal name
1	FG
2	RX-A
3	TX-B
4	GND
5	-
6	GND
7	RX-B
8	TX-A
9	-

Pin No.	Signal name
1	FG
2	RX-A
3	TX-B
4	GND
5	-
6	GND
7	RX-B
8	TX-A
9	-

(2) One tool cable for testing the RS-232C communication system
This tool cable is used to connect the “TERMINAL 1” and “TERMINAL 2” connectors on the connector panel. This tool cables which are shorted the two D-SUB 9-pin male connectors as shown below.



Pin No.	Signal name
1	DCD
2	RXD
3	TXD
4	DTR
5	GND
6	DSR
7	RTS
8	CTS
9	RI

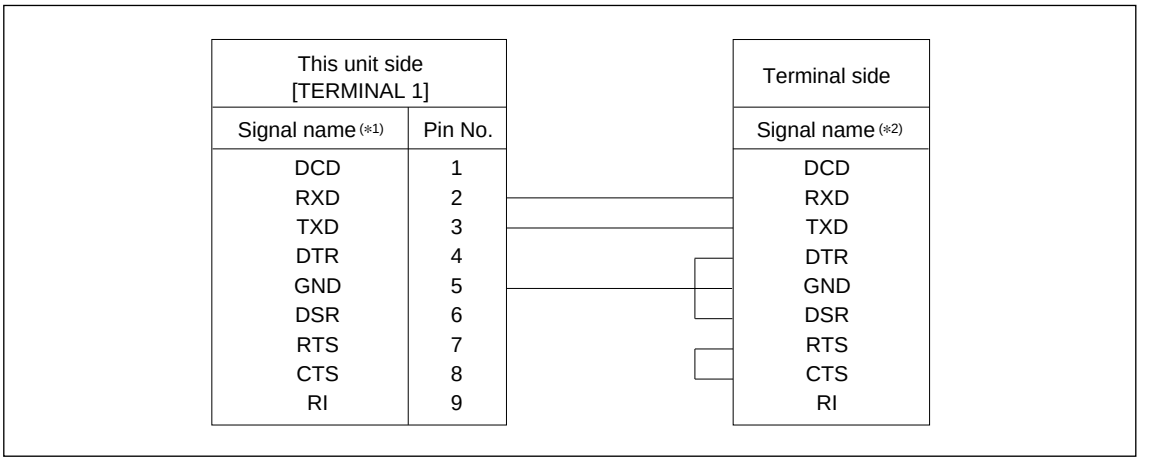
Pin No.	Signal name
1	DCD
2	RXD
3	TXD
4	DTR
5	GND
6	DSR
7	RTS
8	CTS
9	RI

3. DVS-7200A

Required in “Timer & Int. test” menu.

3-3-2. Connecting the Test Terminal with Connector to This Unit

Connect the terminal with described in the section 3-3-1 and the “TERMINAL 1” D-sub 9-pin connector on the connector panel of the unit.
For the connection, use the cable with satisfied the following specifications.

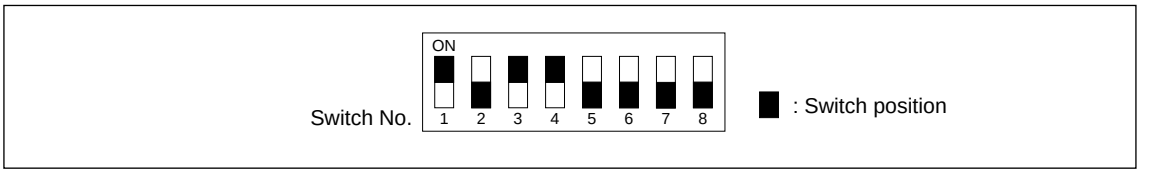


Note

The RXD (receiving data) and the TXD (sending data) of (∗1) are the sending and receiving signals from this unit. The RXD (receiving data) and the TXD (sending data) of (∗2) are the sending and receiving signals from the terminal. Therefore, the RXD of (∗1) is connected to the TXD of (∗2), and the TXD of (∗1) is connected to the RXD of (∗2).

3-3-3. Starting of the Self Diagnostics Mode

(1) Open the panel. (Refer to the section 1-2-1.)
(2) Turn off the power switch in the control panel.
(3) Connect the test terminal with connector. (Refer to the section 3-3-2.)
(4) Select the DIP switch (S4) on the CPU-246 board as shown below.



(5) Turn on the power switch DVS-7200A.
(6) Close the panel. (Refer to the section 1-2-1.)
(7) The following message is indicated on the terminal display.

```
<MC68EC030 monitor V0.33 $Date: 1995/08/04 02:07:56 $
COPYRIGHT (C) 1990,1992- SONY Corporation
Help Support
GDB & ECHO ON/OFF Support
>
```

Note

The date and the version of the test menu can be vary.

(8) Input “hwt” and press RETURN.

```
> hwt
```

(9) The terminal display is changed to the “H/W Tester on CPU-246” menu and the self diagnostics mode starts.

```
<<<<  H/W  Tester on CPU-246  >>>>

    1.  MEMORY
    2.  PIO
    3.  FDC
    4.  TIMER & INT
    5.  EL PANEL
    6.  AND
    7.  COMMUNICATION
    8.  BUZZER
    9.  SUB CPU
   10.  MISC
    Q.  Quit

    H/W Test = >
```

(10)Selecting the menu and executing the test

Select a menu item from the “H/W Tester on CPU-246” menu display. Input the menu item number and press RETURN.

(example)

```
H/W Test = > 1
```

(11)Ending the “H/W Tester on CPU-246” menu

Input “Q” on the “H/W Tester on CPU-246” menu and press RETURN.

```
H/W Test = > Q
```

3-3-4. Test Procedures

1. Memory test

(1) After starting the self diagnostics mode in the section the 3-3-3, input the menu item number “1” on the “H/W Tester on CPU-246” menu and press [RETURN].

```
H/W Test = > 1
```

Terminal display changes to the following “Memory test” display.

```
<<<  MEMORY TEST  >>>

   0.  RAM
   1.  DEBUG RAM
   2.  BACKUP RAM
   3.  VRAM (M)
   4.  VRAM (S)
   5.  DPR (SUB)
   6.  DPR (SIO0)
   7.  DPR (SIO2)
   8.  DPR (SIO3)
   9.  DPR (AND)
  10.  MAIN FLASH
  11.  FONT FLASH
  12.  DPR (ETHERNET OPTION)
  13.  DPR (SCSI OPTION)
   Q.  Quit

   Select Memory = >
```

Names of ICs on the CPU-246 board corresponding to each item of the “Memory test” display on the front page are shown below.

Item	IC
0. RAM	IC43 - 50
1. DEBUG RAM	For factory
2. BACKUP RAM	IC39
3. VRAM (M)	IC93, 94
4. VRAM (S)	IC112, 113
5. DPR (SUB)	IC134, 135
6. DPR (SIO0)	IC85
7. DPR (SIO2)	IC1 (IF-523 board)
8. DPR (SIO3)	IC6 (IF-523 board)
9. DPR (AND)	IC123
10. MAIN FLASH	IC51, 52, 55, 56 IC59, 60, 63, 64
11. FONT FLASH	IC104
12. DPR (ETHERNET OPTION)	Reserved
13. DPR (SCSI OPTION)	Reserved

Note

The ICs of the above test items 2, 10 and 11 are stored the data if turning the power off. But if this test is performed, the memory contents are erased. The memory content of items 2 which are the setup information must be copied to a floppy disk before starting the test, and be down-loaded to the memory ICs after completing the test.

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(2) Select a memory and perform the test as follows.
(example) Testing “RAM”
Input the item number “0” and press [RETURN].

```
Select Memory = > 0
```

The memory test is automatically performed and the test result appeared on the terminal display.

```
<<<  RAM CHECK  >>>

1. ADR BUS CHECK ・ ・ ・ ・
        OK
2. R/W DATA CHECK ・ ・ ・ ・
                                          0------25-----50-----75-----100
Address =[00A00000 -- 00B00000] ＊＊＊＊＊＊＊＊＊＊＊＊＊＊＊＊＊＊＊＊  OK!

        Hit any key !
```

(3) Checking the test result
“OK” appears on each item of the selected memory test.

(example) “RAM” Test
“OK” appears on each item of “RAM CHECK” display.

(4) Exiting each item of memory test
Press any terminal button to return to the “Memory test” display.

(5) Exiting the “Memory test”
Input “Q” on the “Memory test” display and press [RETURN].
The display returns to the “H/W Tester on CPU-246” menu.

```
Select Memory = > Q
```

2. PIO test

(1) After starting the self diagnostics mode in the section 3-3-3, input the menu item number “2” on the “H/W Tester on CPU-246” menu and press RETURN.

```
H/W Test = > 2
```

Terminal display changed to the following “PIO test” display.

```
<<< PIO test >>>

 0. Read
 1. Write
 Q. Quit

   Input test No. >
```

(2) Selecting and testing the “Read” test from the “PIO test”
Input the item number “0” on the “PIO test” display and press RETURN.

```
Input test No. > 0
```

The read test is automatically performed and the test result appears on the terminal display.

```
    <<< PIO DATA READ >>>
1.  STATUS   [PIO-1.reg B]
    SIO0  : L , SIO1  : L , SIO2  : L , SIO3  : L
    FIELD : L , FLDCNT : L , CENTRO : L , VDSNS : L
2.  DIP SW  [PIO-1.reg D]
    1: ON  2: OFF  3: ON  4: ON  5: OFF  6: OFF  7: OFF  8: OFF
3.  ERROR     [PIO-1.reg E]
    UNIT A : H   UNIT B : L  (*1)

      Type any key !
```

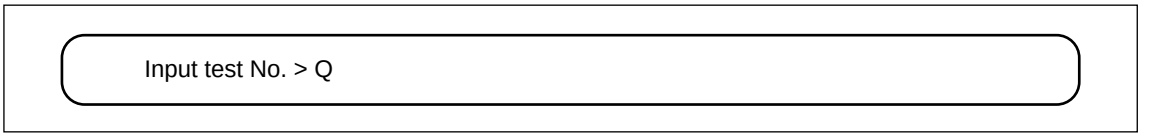
(*1) H : The power supply is normal, or the power supply unit is not installed.
L : The power supply is abnormal. (The power supply unit is faulty, the power supply fan is stopped, or the output voltage is greatly different from the set value.)

(3) Checking the test result
Check every test item of the “PIO data read”.
(a) “1. STATUS [PIO-1 reg B]” is the adjustment item at the factory.
(b) “2. DIP SW [PIO-1 reg D]”
The switches 1, 3 and 4 of the DIP switch (S4) on the CPU-246 board must be selected to “ON” and the other switches must be selected to “OFF”.

(4) “1. Write” for the adjustment item at the factory

(5) Ending the “Read test”
Press your required terminal button to return to the “PIO test” display.

(6) Ending the “PIO test”
Input “Q” on the “PIO test” display and press RETURN.
The display returns to the “H/W Tester on CPU-246” menu.



3. FDC test

(1) After starting the self diagnostics mode in the section 3-3-3, input the menu item number “3” on the “H/W Tester on CPU-246” menu and press RETURN.

```
H/W Test = > 3
```

Terminal display changes to the following “Floppy Disk drive/Controller (FDC)” display.

```
<<<  Floppy Disk drive/Controller test  >>>

  0.  Directory
  1.  Write protect
  2.  Seek            – – –  use formated disk
  3.  Read & Write    – – –  use formated disk
  4.  Format
  Q.  Exit

        Input test No. >
```

(2) Select an item from the “FDC test” and perform the test as follows.

(example) Testing “Directory”
Input the item number “0” on the “FDC test” display and press RETURN.

```
Input test No. > 0
```

The item “0” of the “FDC test” is automatically performed and the file names of the disk which is currently inserted in the FDD are displayed as shown below.

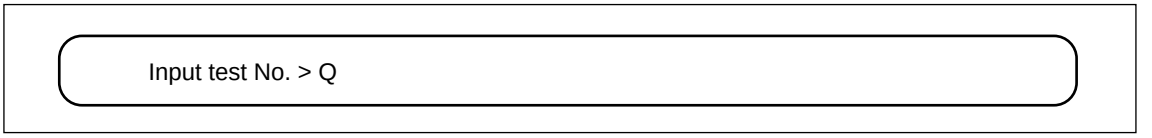
```
<<  Directory test              Start  >>

a – rw   330833    '95 – 06 – 19   13 : 53   BKDS7010.WLZ
a – rw    68954    '95 – 06 – 19   13 : 56   FONT.WLZ
a – rw    11913    '95 – 06 – 19   14 : 02   SUB.WLZ

        Hit any key !
```

(3) Checking the test result
Check the following items on each test item of the “FDC test”.
(a) “0. Directory”
This test checks that the file names of the floppy disk which is currently inserted in the FDD.
(b) “1. Write protect”
This test checks that the write-protect status of the floppy disk.
(c) “2. Seek”
Check that “OK” appears on the “Seek” operation.
(d) “3. Read & Write”
Check that “OK” appears on the read and write operation of the FDD.
(e) “4. Format”
Check that “OK” appears on the formatting operation of the FDD.

Note

- Items “2. Seek” and “3. Read & Write” of the “FDC test” menu require a formatted floppy disk.
- Items “3. Read & Write” and “4. Format” of the “FDC test” menu damage to the stored contents of floppy disk.

(4) Ending the test of the items of the FDC
Press your required terminal button to return to the “FDC test” display.
(5) Ending the “FDC test”
Input “Q” on the “FDC test” display and press RETURN.
The display returns to the “H/W Tester on CPU-246” menu.



4. Timer & Interrupt test

This item tests the built-in timer and interrupt controller (IC76) on the CPU-246 board and is checks their function correctly.

Note

This test requires DVS-7200A.

(1) Connect the “PANEL 1” connector (D-SUB 9-pin) on the rear panel of the DVS-7200A to the “SWITCHER” connector (D-SUB 9-pin) on the connector panel of this unit.
(2) After starting the self diagnostics mode in the section 3-3-3, input the menu item number “4” on the “H/W Tester on CPU-246” menu and press [RETURN].

```
H/W Test = > 4
```

The Timer & Interrupt test is automatically performed and the test result appeared on the terminal display.

```
<<<  TIMER & INTERRUPT TEST  >>>

1.  TIMER 0 & INT   : OK ! (*1)
2.  TIMER 1 & INT   : OK ! (*1)
3.  TIMER 2 & INT   : OK ! (*1)
4.  VD INT          : OK ! (*1)

    Hit any key to quit !
```

(∗1) OK ! : Normal

(3) Checking the test result
Check that “OK” appears on each item of the Timer & and Interrupt test.
(4) Exiting the “Timer & and Interrupt test”
Press your required terminal button to return to the “H/W Tester on CPU-246” menu.

5. EL panel test

(1) After starting the self diagnostics mode in the section 3-3-3, input the menu item number “5” on the “H/W Tester on CPU-246” menu and press [RETURN].

```
H/W Test = > 5
```

Terminal display changes to the following “EL test”.

```
<<< EL test >>>

 1. Main screen crosshatch test.
        Hit any key !
 2. Main screen character test.
        Hit any key !
 3. Main screen scroll test.
        Hit any key !
 4. Main screen reverse test.
        Hit any key !
 5. Main screen blink test.
        Hit any key !
 6. Sub screen crosshatch test.
        Hit any key !
 7. Sub screen character test.
        Hit any key !
 8. Sub screen scroll test.
        Hit any key !
 9. Sub screen over test.
        Hit any key !
10. Sub screen OR test.
        Hit any key !
11. All clear.
        Hit any key !
12. All light.
        Hit any key !
13. EL disable test.
        Hit any key !
```

(2) Selecting a menu item from the “EL test” and executing the test
Press your required button on the terminal. Content of the item 1 of the “EL test” menu appears on the EL display of this unit. Every pressing of your required button on the terminal, the item of the “EL test” is performed.

(3) Checking the test result

Check the followings on each item of the “EL test”.

- The character font of the main screen uses the flash memory.
- The character font of the sub screen uses the ROM.

(a) “1. Main screen crosshatch test”

Check that the vertical and horizontal lines of the crosshatch pattern do not bend or disappear.

Note

If there is any non-programmed memory, all elements of the EL display light.

(b) “2. Main screen character test”

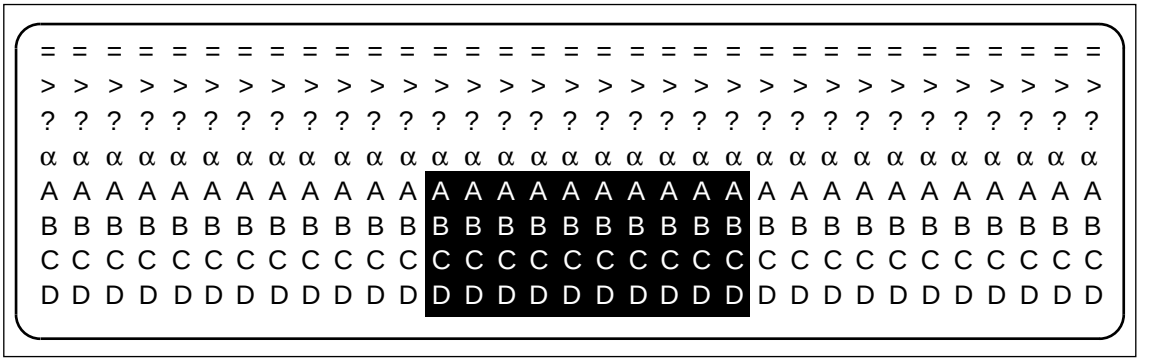
Check that the alphanumeric characters are indicated.

(c) “3. Main screen scroll test”

Check that the alphanumeric character display of the item (b) scrolls in the vertical direction.

(d) “4. Main screen reverse test”

Check that the alphanumeric character display of the item (b) is partially highlighted in blocks.



(e) “5. Main screen blink test”

Check that the partially highlighted portions of the item (d) blink.

(f) “6. Sub screen crosshatch test”

Check that the vertical and horizontal lines of the crosshatch pattern do not bend or disappear.

(g) “7. Sub screen character test”

Check that the alphanumeric characters are indicated.

(h) “8. Sub screen scroll test”

Check that the alphanumeric character display of the item (g) scrolls in the vertical direction.

(i) “9. Sub screen over test”

Check that the alphanumeric characters “S” are displayed in the alphanumeric characters “M” in blocks shape.

(j) “10. Sub screen OR test”

Check that the alphanumeric characters “S” are displayed on the half-tone background.

(k) “11. All clear”

Check that all elements of the EL display light off.

(l) “12. All light”

Check that all elements of the EL display light.

(m) “13. EL disable test”

Check that all elements of the EL display light off.

(4) Ending the “EL test”

Press your required button on the terminal and the display returns to the “H/W Tester on CPU-246” menu.

6. AND test

This menu tests the alphanumeric display.

(1) After starting the self diagnostics mode in the section 3-3-3, input the menu item number “6” on the “H/W Tester on CPU-246” menu and press [RETURN].

```
H/W Test = > 6
```

The terminal screen changes to the following “AND test” display.

```
<<<  AND test  >>>

1. Fill AND MEMORY with W.
        Hit any key !

2. Fill AND MEMORY with M.
        Hit any key !

3. Fill AND MEMORY with BLANK.
        Hit any key !

4. Fill AND MEMORY with FULL.
        Hit any key !

5. Lum level = 3
        Hit any key !

6. Lum level = 2
        Hit any key !

7. Lum level = 1
        Hit any key !

8. Lum level = 0
        Hit any key !
```

(2) Selecting a menu item from the “AND test” and executing the test
Press your required button on the terminal. The “AND test” item 1 is performed. Press your required button on the terminal. The “AND test” item 2 is performed. All contents of the test items appear on the alphanumeric display.

(3) Checking the test result

Check the followings on each item of the “AND test”.

(a) “1. Fill AND MEMORY with W.”
Check that all alphanumeric displays are filled with the letter “W”.

(b) “2. Fill AND MEMORY with M.”
Check that all alphanumeric displays are filled with the letter “M”.

(c) “3. Fill AND MEMORY with BLANK.”
Check that all alphanumeric displays light off.

(d) “4. Fill AND MEMORY with FULL.”
Check that all dots of all alphanumeric displays light up.

(e) “5. Lum level = 3”
Check that it is possible to adjust the brightness level 3 model (the 1st brightness).

(f) “6. Lum level = 2”
Check that it is possible to adjust the brightness level 2 model (the 2nd brightness).

(g) “7. Lum level = 1”
Check that it is possible to adjust the brightness level 1 model (the 2nd darkness).

(h) “8. Lum level = 0”
Check that it is possible to adjust the brightness level 2 model (the 1st darkness).

(4) Ending the “And test”

Press your required terminal button to return to the “H/W Tester on CPU-246” menu.

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7. Communication test

(1) Connect the three tool cables for testing the RS-422A communication system and the one tool cable for testing the RS-232C communication system in the section 3-3-1 to the following D-SUB 9-pin connectors.

(a) Tool cables for testing the RS-422A communication system
Between “SWITCHER” and “DME” connectors
Between “REMOTE 1” and “REMOTE 2” connectors
Between “REMOTE 3” and “REMOTE 4” connectors

(b) Tool cables for testing the RS-232C communication system
Between “TERMINAL 1” and “TERMINAL 2” connectors

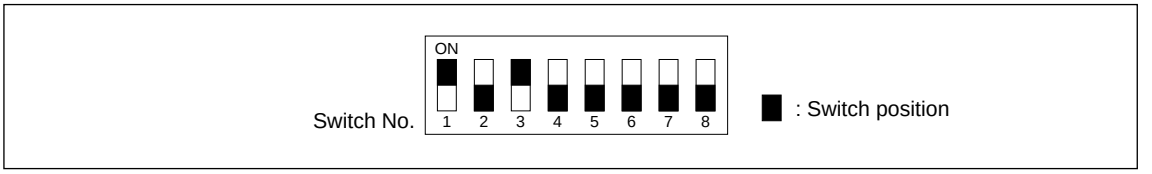
Checking the IF-523 board

The IF-523 board needs for the items (b), (c), (f) and (g) in the step (9).

Note

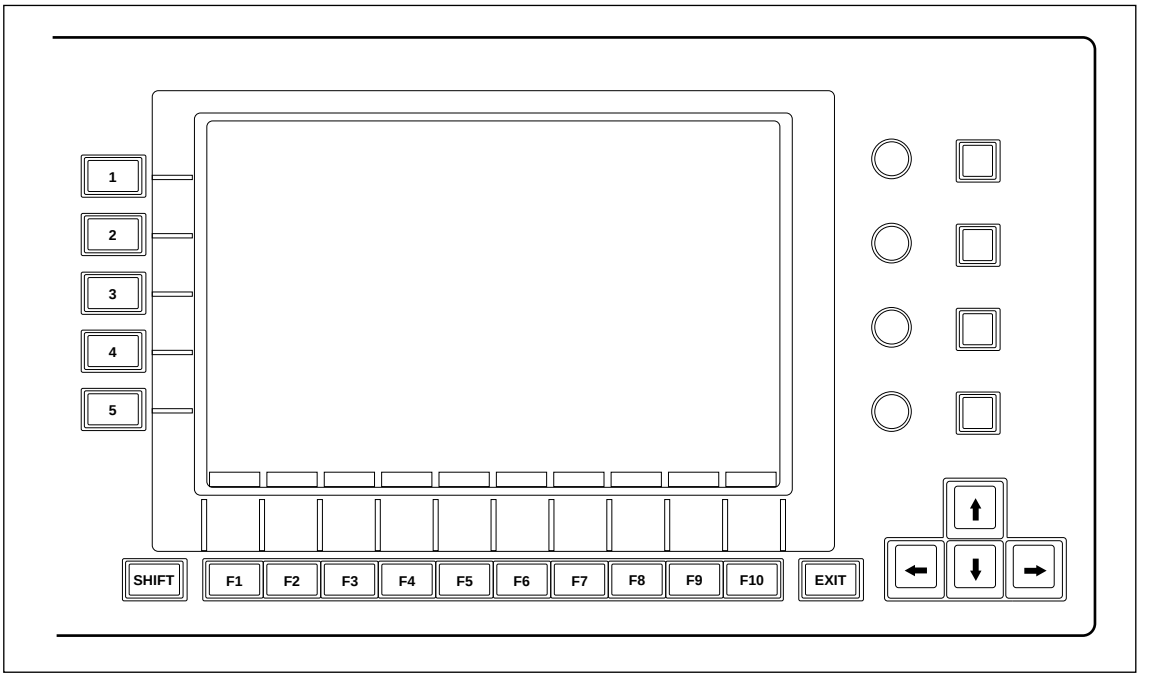
The tool cable for testing the RS-232C communication system is connected between “TERMINAL 1” and “TERMINAL 2” connectors in this test. Therefore, the terminal with connector for the test cannot be used. Perform this test in the following procedures.

(2) Open the panel. (Refer to the section 1-2-1.)
(3) Turn off the power switch in the control panel.
(4) Set the DIP switch (S4) on the CPU-246 board as shown below.
(5) Turn on the power switch in the control panel.



(6) Close the panel. (Refer to the section 1-2-1.)

(7) Press the [1] button on the display panel of this unit. The “H/W Tester on CPU-246” menu appears on the EL display. The buttons peripheral the EL display are shown below.



(8) Selecting “Communication test” menu item and executing the test
Press [F8] on the display panel and input “7” on the “H/W Tester on CPU-246” menu display and press the [EXIT] button on the display panel.

Notes

- Press [F1] through [F10] button on the display for inputting a number. The buttons [F1] through [F10] correspond to the numbers 1 through 0.
- The [EXIT] button has the function of the [RETURN] button.

```
H/W Test = > 7
```

The communication test is automatically performed and the test result is shown on the EL display as follows.

```
<<< COMMUNICATION TEST >>>

  Reset sio0                          : OK
  Reset sio2                          : OK
  Reset sio3                          : OK
  Reset sio4 (sub cpu)                : OK

  sio0 ch0 [controlling] <-> ch1 [controlled]     : OK
  sio0 ch1 [controlling] <-> ch0 [controlled]     : OK

  sio2 ch0 [controlling] <-> ch1 [controlled]     : OK
  sio2 ch1 [controlling] <-> ch0 [controlled]     : OK

  sio3 ch0 [controlling] <-> ch1 [controlled]     : OK
  sio3 ch1 [controlling] <-> ch0 [controlled]     : OK

  sio4 ch0 [controlling] <-> ch1 [controlled]     : OK
  sio4 ch1 [controlling] <-> ch0 [controlled]     : OK
```

(9) Checking the test result

Check that “OK” appears on each item of the communication test.

(a) “Reset sio0”
Indicates initialization status of SIO0.

(b) “Reset sio2”
Indicates initialization status of SIO2 (IC3 on the IF-523 board).

(c) “Reset sio3”
Indicates initialization status of SIO3 (IC7 on the IF-523 board).

(d) “Reset sio4 sub cpu”
Indicates initialization status of sub CPU.

(e) “sio0 ch0 [controlling] <-> ch1 [controlled]
sio0 ch1 [controlling] <-> ch0 [controlled]”
Indicates communication status between “SWITCHER” and “DME” connectors.

(f) “sio2 ch0 [controlling] <-> ch1 [controlled]
sio2 ch1 [controlling] <-> ch0 [controlled]”
Indicates communication status between “REMOTE 3” and “REMOTE 4” connectors.

(g) “sio3 ch0 [controlling] <-> ch1 [controlled]
sio3 ch1 [controlling] <-> ch0 [controlled]”
Indicates communication status between “REMOTE 3” and “REMOTE 4”connectors.

(h) “sio4 ch0 [controlling] <-> ch1 [controlled]
sio4 ch1 [controlling] <-> ch0 [controlled]”
Indicates communication status between “TERMINAL 1” and “TERMINAL 2”connectors.

(10) Terminating the “Communication test”

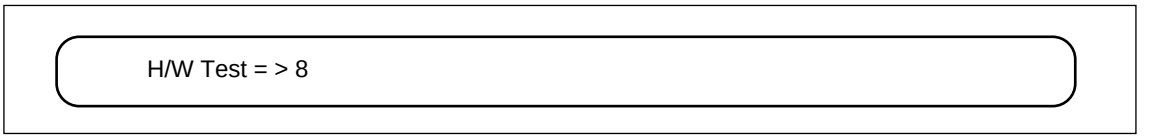
Press the [EXIT] button on the EL panel to return to the “H/W Tester on CPU-246” menu.

(11) Remove all tool cables for communication tests from the connector panel and connect the terminal with connector for test to the “TERMINAL 1” connector. (Refer to the section 3-3-2.)

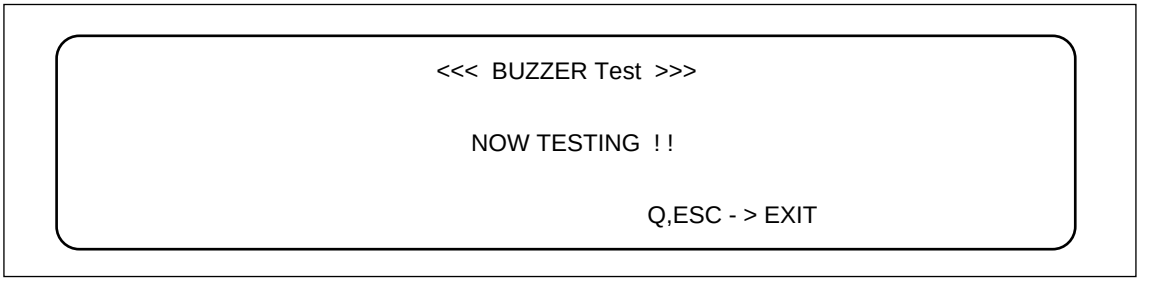
8. Buzzer test

Checks that the buzzer sounds.

(1) After starting the self diagnostics mode in the section 3-3-3, input the menu item number “8” on the “H/W Tester on CPU-246” menu and press [RETURN].



The terminal screen changes to the following display and buzzer sounds intermittently.



(2) Checking the test result
Check that buzzer sounds intermittently.

(3) Ending the “Buzzer test”
Press “Q” or “ESC” button on the terminal to return to the “H/W Tester on CPU-246” menu.

9. SUB CPU test

The sub CPU is controled the lighting of the LEDs and is read the switch data and volume control data. This step is described about only the “SUB CPU test” for the KY-318 through 324 boards.

(1) After starting the self diagnostics mode in the section 3-3-3, input the menu item number “9” on the “H/W Tester on CPU-246” menu and press [RETURN].

```
H/W Test = > 9
```

The terminal screen changes to the following “SUB CPU test” display.

```
<<<<<<<<<<  SUB CPU Test  >>>>>>>>>>
    – – – – – Test Menu – – – – –
    1  : SW SCAN Test
    2  : LED LIGHTING Test
    3  : 7SEG LED Test
    4  : FADER & JOY STICK Test
    5  : VOLUME KNOB Test
    6  : LED BRIGHTNESS Test
    Q  : Exit

         Input Test No ! (1-6) or  Q"
```

(2) Select a menu item from the “SUB CPU test” and execute the test.

(example) Testing “1 : SW SCAN test”
Press “1” on the terminal.
The “1 : SW SCAN test” is automatically performed.

(3) Checking the test result
Check the followings on each test item.
(a) “1 : SW SCAN test”
Press the button on the control panel and check that the pressed button lights.
For the two-color lighting buttons, press the button again and check that the second color lights.
(b) “2 : LED lighting test”
Check that all buttons on the control panel light each block and each board.
(c) “3 : 7-SEG LED test”
Check that all elements for the numeric display 7-segment LED on the control panel light.
(d) “4 : Fader & Joy stick test”
Check that the present value of the fader lever and the joy stick is displayed on the EL display.
(d) “5 : Volume knob test”
Check that the present value of the volume knob is displayed on the EL display.
(f) “6 : LED brightness test”
Check that the brightness and the color of the buttons in each block on the control panel are not vary.

(4) Ending the “Buzzer test”
Press “Q” button on the terminal to return to the “H/W Tester on CPU-246” menu.

10. MISC test

This is the adjustment item at the factory.

3-3-5. Ending the Self Diagnostics Mode

(1) Open the panel. (Refer to the section 1-2-1.)
(2) Turn off the power switch in the control panel.
(3) Select all switches of the DIP switch (S4) on the CPU-246 board to off. (Operation mode)
(4) Turn on the power switch in the control panel.
(5) Close the panel. (Refer to the section 1-2-1.)

3-4. Self Diagnostics Mode (BKDS-7025/7026)

The self diagnostics consisting of the following ten menu items can be performed by connecting the terminals in the section 3-6-1 and start the self diagnostics mode. Run the tests in each menu.

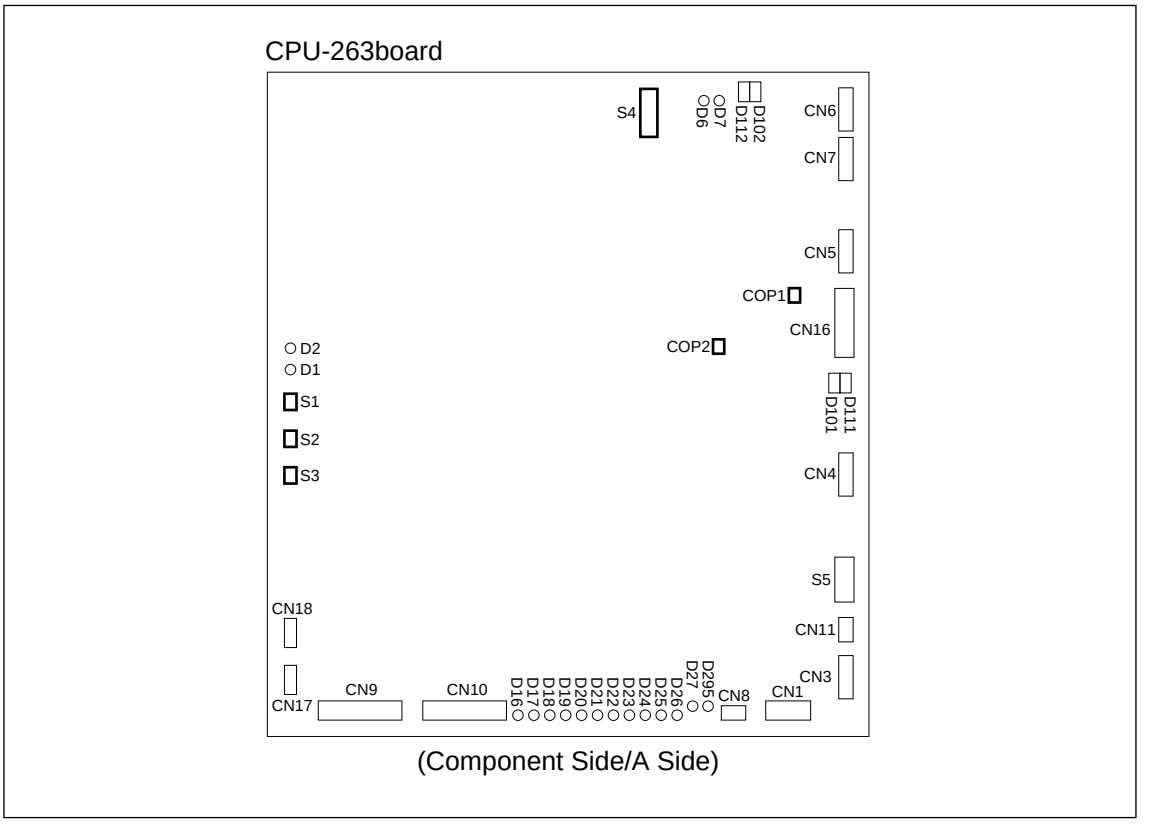
(1) "1. Memory test" Menu
Tested the peripheral memory of the main CPU and checked the memories function.
(2) "2. PIO test" Menu
Tested the PIO (IC70, IC74) and checked the PIO function.
(3) "3. GPI test" Menu
Tested the interface of the GPI connector on the connector panel of this unit and checked the interface functions.
(4) "4. FDC test" Menu
Tested the floppy disk controller (FDC) and the floppy disk drive (FDD), checked the disk condition.
(5) "5. Timer & Interrupt test" Menu
Tested the CPU-263 board built-in timer and the interrupt controller, and checked they function. For this test, DVS-7200A is needed.
(6) "6. EL panel test" Menu
Tested the EL display and the control circuit, and checked the displayed contents.
(7) "7. And test" Menu
Checked the displayed contents on the alphanumeric display.
(8) "8. Communication test" Menu
Tested the communication of the communication ports and checked their function.
(9) "9. Buzzer test" Menu
Checked that the buzzer sounds.
(10)"10. SUB CPU test" Menu
Tested the sub CPU which controls lighting of the LEDs, and which is read the switch data and volume control data. And checked the sub CPU functions.
(11)"11. MISC test" Menu
Used at the factory.

Use "Q. Quit" to exit the self diagnostics menu.

3-5. Switch Settings on the CPU-263 Board and LEDs Description (BKDS-7025/7026)

Note

The addresses on the boards are shown by ( ) marks.



COP1 (F2) :
This is used only for service and is opened under normal status.

COP2 (G3) :
Normaly, short-circuit the “NOR” side.

S1 (G12) : RESET switch
This switch is used only for service. If pressing, the SYSTEM is reset and is restarted.

S2 (H12) : ABORT switch
This switch is used for the adjustment in the factory.

S4 (B5) : Main CPU select switch
Switch S4 sets the operation of the main CPU. After setting it, press the RESET switch or turn off the main power switch and turn it on again.

Default setting when shipped from the factory: All OFF

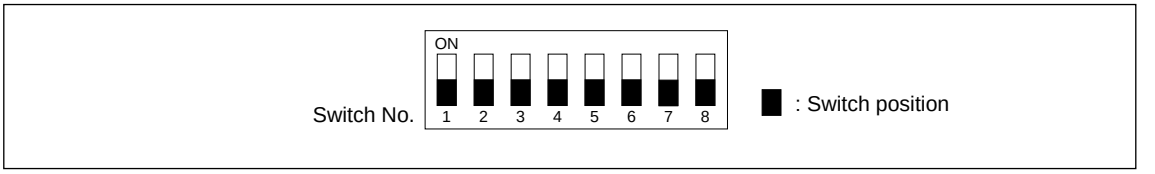
Note
■ indicates the knob position.

For Starting Up of the Control Panels

This unit can be update the operating soft using the floppy disk.
The program that is loaded from the floppy disk is stored in the flash memory on the CPU-263 board.
By the selection of the switch S4, this unit is prepared the following three procedures for the starting up of the control panels.

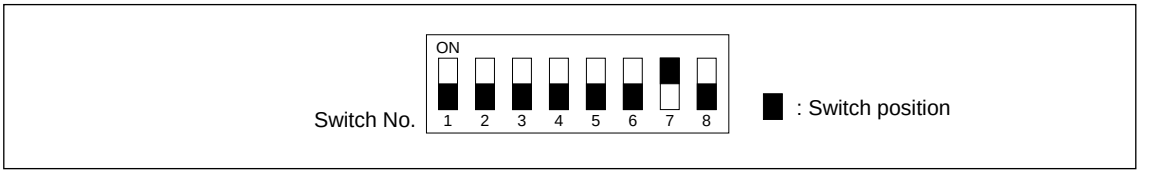
1. Normal Mode

Under normal operation, start up the control panel in this mode.



Note
Because this mode is not confirmed the contents of the flash memory, a malfunction occurs when the program is not written in the flash memory and the contents of the flash memory are wrong.
If something is wrong, re-program to the flash memory referring to “2. Add-on Mode of Flash Memory Test” and “3. Request Mode of Down Load”.

2. Add-on Mode of Flash Memory Test



This mode is differ from the “1. Normal Mode”. This mode is tested the contents of the flash memory, and is carried out the main program only when the contents of the flash memory are correct.
If the program is not written in the flash memory or the contents of the flash memory are wrong, the menu that is requested to re-program is displayed.
After re-programming, select the select switch S4 to the mode of the “1. Normal Mode” and re-turn on the power.

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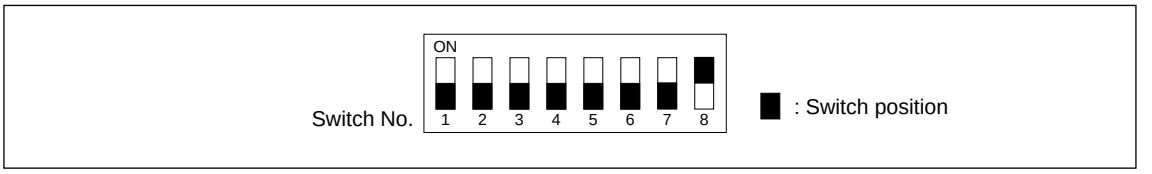
3. Request Mode of Down Load



Regardless of the contents of the flash memory, the menu that is requested to re-program using the floppy disk is displayed.

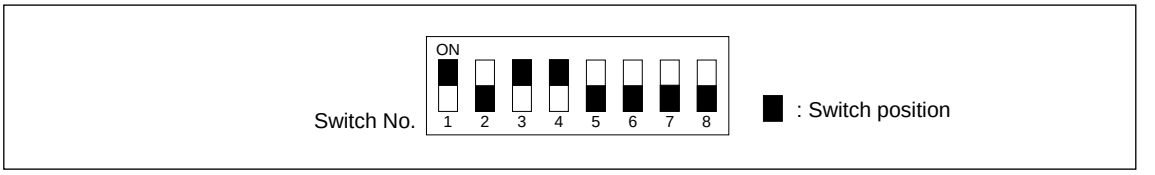
The contents of the flash memory are tested in the “2. Add-on Mode of Flash Memory Test”, but the test passes in a low probability if they are wrong, and a malfunction may occur.

Note

When the control panels can not be started up in both mode of the “1. Normal Mode” and “2. Add-on Mode of Flash Memory”, carry out this mode.

After re-programming, select the select switch S4 to the mode of the “1. Normal Mode” and re-turn on the power.

Test Mode Using a VT Terminal



If a VT terminal is connected to the “TERMINAL 1” connector on the connector panel, all trouble diagnosis of the unit can be carried out. For the connection and the contents of the test, refer to the “3-6-2. Connecting the test terminal with connector to this unit”.

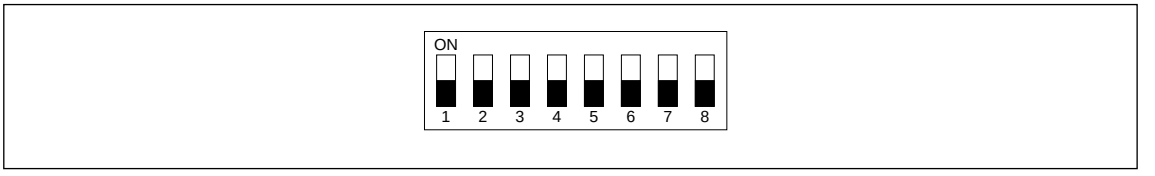
S3 (J12) : SUB ABORT switch
This switch is used for the adjustment in the factory. If pressing this switch after selecting the S5 switch on the CPU-263 board to the SUB CPU flash memory access protection mode, erase the content of the flash memory for stored-program.

S5 (M1) : SUB CPU switch
This switch is used to select the operation mode of SUB CPU.

Selections in the factory : All OFF

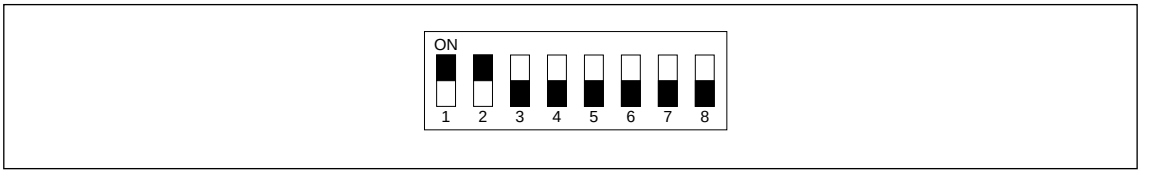
1. Selections when operating under normal status

The selections for normal operation



2. Sub CPU Flash Memory Access Inhibit Mode

In this mode, the sub CPU runs using only the program stored in the ROM, regardless of the state of the flash memory. The sub CPU access to the flash memory is inhibited.



D1 (Red color) (G12) : RUN
Lights when the MAIN CPU is operating.

D2 (Red color) (G12) : HALT
Lights when the MAIN CPU is in the HALT state.

D6 (Red color) (A4) : M1
Lights when the reference signal is not transmitted from the DVS-7200A.

D7 (Red color) (A4) : M0
Lights if the parameter read process is not executed with the DVS-7200A.

D16 (Red color) (R6) : CH0
Blinks when the control signal from the DVS-7200A is received.

D17 (Red color) (R6) : CH1
Not used.

D18 (Red color) (R6) : SIO0
This LED indicates the status of the CPU (IC82 on the CPU-263 board) which controls the two ports of SWITCHER and DSK on the connector panel.
Lights off : The CPU is operating normally.
Lights : The CPU is not started up correctly.
Blinks : The dual port RAM (IC80 on the CPU-263 board), which is controlled by the CPU, is abnormal.

D19 (Red color) (R6) : CH2
Blinks when receiving the control signal from the equipment which is connected to the DME connector on the connector panel.

D20 (Red color) (R6) : CH3
Blinks when receiving the control signal from the equipment which is connected to the REMOTE 1 connector on the connector panel.

D21 (Red color) (R6) : SIO1
This LED indicates the status of the CPU (IC86 on the CPU-263 board) which controls the two ports of DME and REMOTE 1 on the connector panel.
Lights off : The CPU is operating normally.
Lights : The CPU is not started up correctly.
Blinks : The dual port RAM (IC86 on the CPU-263 board), which is controlled by the CPU, is abnormal.

D22 (Red color) (R5) : CH4
Blinks when receiving the control signal from the equipment which is connected to the REMOTE 2 connector on the connector panel.

D23 (Red color) (R5) : CH5
Blinks receiving the control signal from the equipment which is connected to the REMOTE 3 connector on the connector panel.

D24 (Red color) (R5) : SI02
This LED indicates the status of the CPU (IC3 on the IF-523 board) which controls the two ports of REMOTE 2 and REMOTE 3 on the connector panel.
Lights off : The CPU is operating normally.
Lights : The CPU is not started up correctly.
Blinks : The dual port RAM, which is controlled by the CPU, is abnormal.

D25 (Red color) (R5) : CH6
Blinks when receiving the control signal from the equipment which is connected to the REMOTE 4 connector on the connector panel.

D26 (Red color) (R5) : CH7
Blinks when receiving the control signal from the equipment which is connected to the REMOTE 5 connector on the connector panel.

D27 (Red color) (R4) : SI03
This LED indicates the status of the CPU (IC7 on the IF-523 board) which controls the two ports of REMOTE 4 and REMOTE 5 on the connector panel.
Lights off : The CPU is operating normally.
Lights : The CPU is not started up correctly.
Blinks : The dual port RAM, which is controlled by the CPU, is abnormal.

D101 and D111 (H1) : SUB
These LEDs are provided exclusively for maintenance service. They indicate the state of the sub CPU (IC142/CPU-263 board) which controls the LED on/off.

Display Using Area Surrounding LED

The area surrounding the LED indicates the status of the reference signal supplied from the DVS-7200A which is connected to the SWITCHER connector of the connector panel.

- The area flashes in the clockwise direction around the LED :
  The reference signal is in the 525 scanning line mode.
- The area flashes in the counter-clockwise direction around the LED :
  The reference signal is in the 625 scanning line mode.
- All indicators on the surrounding area are lit :
  There is no reference signal. This might be because the DVS-7200A main power is not turned on, or the reference signal is not connected correctly.

Other areas of the LED

These LEDs indicate the operation stasus of the SUB CPU and the memory.

D0 :
Lights : Flash memory (IC143 on the CPU-263 board) of the SUB CPU is damaged.
Lights off : Flash memory (IC143 on the CPU-263 board) of the SUB CPU is normal.

D1 :
Lights : Flash memory (IC143 on the CPU-263 board) of the SUB CPU is empty.
Lights off : Flash memory (IC143 on the CPU-263 board) of the SUB CPU is normal.

D2 :
Lights : The ROM (IC138 on the CPU-263 board), RAM (IC137 on the CPU-263 board) or dual port RAMs (IC134 or IC135 on the CPU-263 board) of the SUB CPU is abnormal.
Light off : The ROM (IC138 on the CPU-263 board), RAM (IC137 on the CPU-263 board) and dual port RAMs (IC134 or IC135 on the CPU-263 board) of the SUB CPU are normal.

D3 :
This LED lights when the system is running in SUB CPU flash memory access inhibit mode due to the S5 switch setting on the CPU-263 board.

D102 and D112 (A3) :
These LEDs indicate the result of checking the operating condition of the main CPU.

D295 (Green color) (R4) : POWER (+5V)
Lights when the power is supplied to the CPU-263 board.

TP1 (J10) : CK40M
The 40 MHz square waves are visible when the system is operating normally.

TP2 (J10) : LCK40M
The 40 MHz square waves are visible when the system is operating normally. However, the waveform at this point has opposite polarity to that of TP1 on the CPU-263 board.

TP3 (J12) : RESET
The system reset signal is visible.

TP4 (G10) : AS
The AS signal which is generated by the main CPU (IC8 on the CPU-263 board) is visible.

TP5 (G9) : STERM
The STERM signal which is generated by the main CPU (IC8 on the CPU-263 board) is visible.

TP6 (G9) : DSACK0
The DSACK0 signal which is generated by the MDEC (IC10 on the CPU-263 board) is visible.

TP7 (G10) : DSACK1
The DSACK1 signal which is generated by the MDEC (IC10 on the CPU-263 board) is visible.

TP8 and TP9 (G5) : M3 and M2
Not used.

TP10 (J3) : VD
The vertical sync signal which is generated by the reference signal supplied from the DVS-7200A is visible. The sync signal of 16 ms rate is visible on the 525 scanning lines. The sync signal of 20 ms rate is visible on the 625 scanning lines.

TP11 (J4) : VDSNS
The “H” level appears when the reference signal from the DVS-7200A is received. The “L” level appears if the reference signal can not be received.

TP12 and TP13 (M3) : S0 and S1
Not used.

3-6. Troubleshooting (BKDS-7025/7026)

3-6-1. Tools and Equipment Required for Troubleshooting

1. Test terminal with connector

Required for all test menus except “Communication test”.

(1) Terminal software
VT100 or VT100 equivalent

(2) Communication system

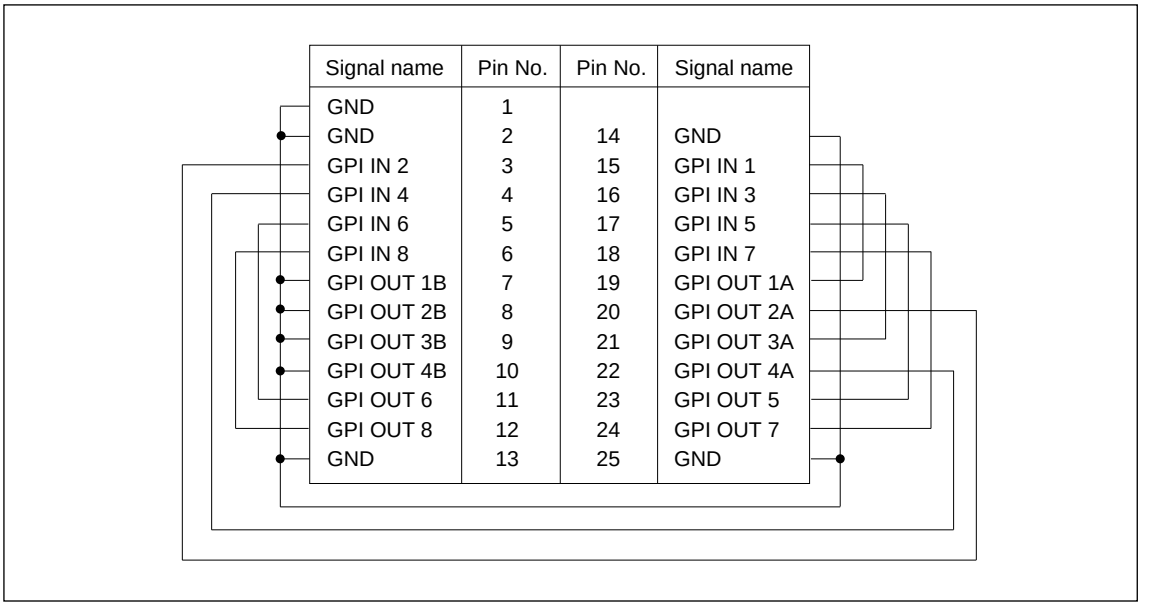
RS-232C

Baud rate	9600 bps
Data length	8 bits
Parity	—
Stop bit	1 bit

(3) Test connector to connect this unit
The pins-4 and -6 of the D-SUB 9-pin male connector are shorted, and pins-7 and -8 of it are shorted. (Refer to the section 3-6-2.)

2. Tool cable for testing GPI connector

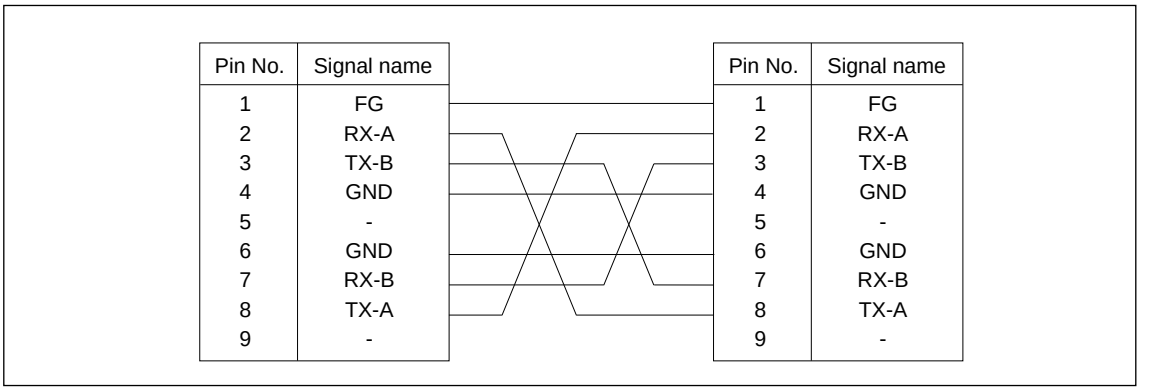
Required for “GPI test”. The pins of the D-SUB 25-pin male connector are shorted as shown below.


Signal name
Pin No.
Pin No.
Signal name
GND 1
GND 2 14 GND
GPI IN 2 3 15 GPI IN 1
GPI IN 4 4 16 GPI IN 3
GPI IN 6 5 17 GPI IN 5
GPI IN 8 6 18 GPI IN 7
GPI OUT 1B 7 19 GPI OUT 1A
GPI OUT 2B 8 20 GPI OUT 2A
GPI OUT 3B 9 21 GPI OUT 3A
GPI OUT 4B 10 22 GPI OUT 4A
GPI OUT 6 11 23 GPI OUT 5
GPI OUT 8 12 24 GPI OUT 7
GND 13 25 GND

3. Tool cable for testing communication system

Required in the “Communication test” menu.

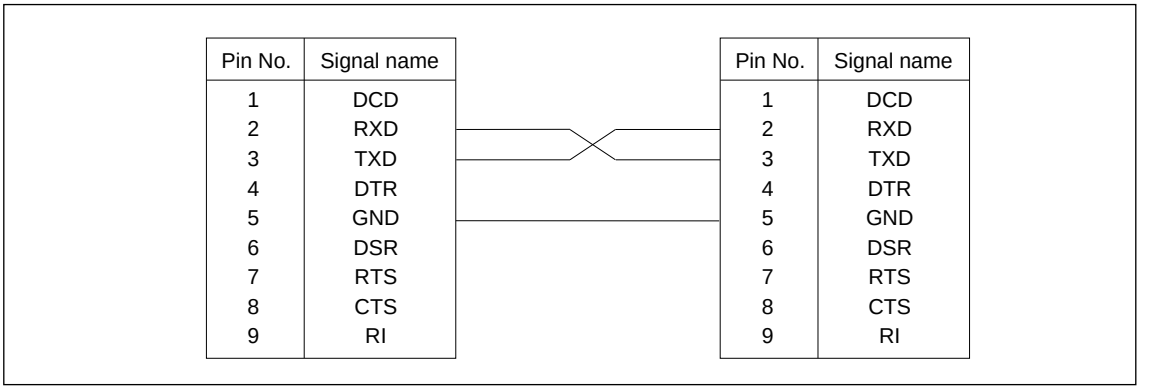
(1) Four tool cables for testing the RS-422A communication system
These tool cables are used to connect the “SWITCHER” and “DSK” , “DME” and “REMOTE 1” , “REMOTE 2” and “REMOTE 3”, and “REMOTE 4” and “REMOTE 5” connectors on the connector panel. These tool cables which are shorted the two D-SUB 9-pin male connectors as shown below.



Pin No.	Signal name
1	FG
2	RX-A
3	TX-B
4	GND
5	-
6	GND
7	RX-B
8	TX-A
9	-

Pin No.	Signal name
1	FG
2	RX-A
3	TX-B
4	GND
5	-
6	GND
7	RX-B
8	TX-A
9	-

(2) One tool cable for testing the RS-232C communication system
This tool cable is used to connect the “TERMINAL 1” and “TERMINAL 2” connectors on the connector panel. This tool cables which are shorted the two D-SUB 9-pin male connectors as shown below.



Pin No.	Signal name
1	DCD
2	RXD
3	TXD
4	DTR
5	GND
6	DSR
7	RTS
8	CTS
9	RI

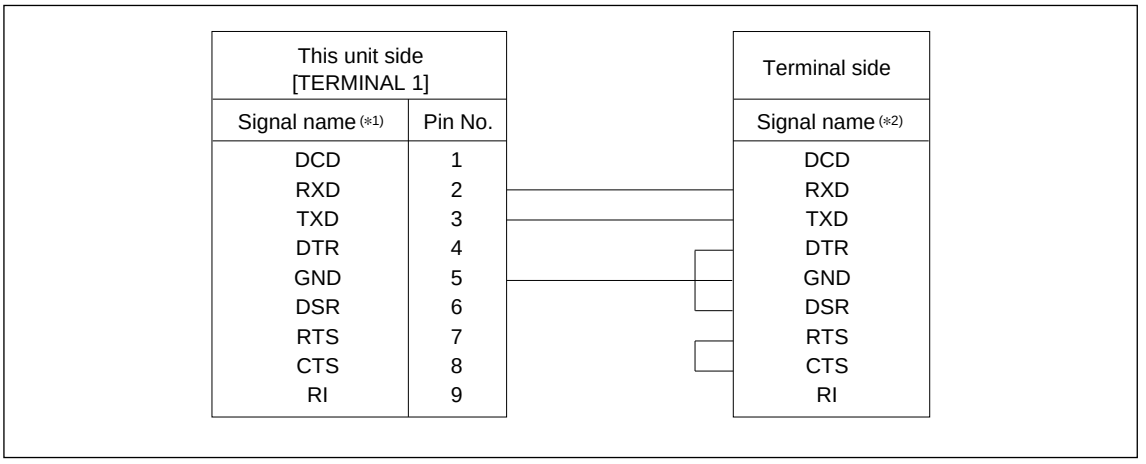
Pin No.	Signal name
1	DCD
2	RXD
3	TXD
4	DTR
5	GND
6	DSR
7	RTS
8	CTS
9	RI

4. DVS-7200A

Required in “Timer & Int. test” menu.

3-6-2. Connecting the Test Terminal with Connector to This Unit

Connect the terminal with described in the section 3-6-1 and the “TERMINAL 1” D-sub 9-pin connector on the connector panel of the unit.
For the connection, use the cable with satisfied the following specifications.

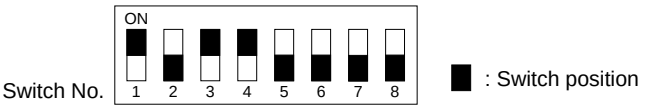


Note

The RXD (receiving data) and the TXD (sending data) of (∗1) are the sending and receiving signals from this unit. The RXD (receiving data) and the TXD (sending data) of (∗2) are the sending and receiving signals from the terminal. Therefore, the RXD of (∗1) is connected to the TXD of (∗2), and the TXD of (∗1) is connected to the RXD of (∗2).

3-6-3. Starting of the Self Diagnostics Mode

(1) Open the panel. (Refer to the section 1-2-1.)
(2) Turn off the power switch in the control panel.
(3) Connect the test terminal with connector. (Refer to the section 3-6-2.)
(4) Select the DIP switch (S4) on the CPU-263 board as shown below.



(5) Turn on the power switch DVS-7200A.
(6) Close the panel. (Refer to the section 1-2-1.)
(7) The following message is indicated on the terminal display.

```
        <MC68EC030 monitor V0.33 $Date: 1995/08/04 02:07:56 $
      COPYRIGHT (C) 1990,1992- SONY Corporation
    Help Support
      GDB & ECHO ON/OFF Support
>
```

Note

The date and the version of the test menu can be vary.

(8) Input “hwt” and press RETURN.

```
> hwt
```

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(9) The terminal display is changed to the “H/W Tester on CPU-263” menu and the self diagnostics mode starts.

```
<<<<  H/W  Tester on CPU-263  >>>>

    1.  MEMORY
    2.  PIO
    3.  GPI
    4.  FDC
    5.  TIMER & INT
    6.  EL PANEL
    7.  AND
    8.  COMMUNICATION
    9.  BUZZER
   10.  SUB CPU
   11.  MISC
    Q.  Quit

    H/W Test = >
```

(10) Selecting the menu and executing the test

Select a menu item from the “H/W Tester on CPU-263” menu display. Input the menu item number and press RETURN.

(example)

```
H/W Test = > 1
```

(11) Ending the “H/W Tester on CPU-263” menu

Input “Q” on the “H/W Tester on CPU-263” menu and press RETURN.

```
H/W Test = > Q
```

3-6-4. Test Procedures

1. Memory test

(1) After starting the self diagnostics mode in the section the 3-6-3, input the menu item number “1” on the “H/W Tester on CPU-263” menu and press [RETURN].

```
H/W Test = > 1
```

Terminal display changes to the following “Memory test” display.

```
<<< MEMORY TEST >>>

  0. RAM
  1. DEBUG RAM
  2. BACKUP RAM
  3. EEPROM
  4. VRAM (M)
  5. VRAM (S)
  6. DPR (SUB)
  7. DPR (SIO0)
  8. DPR (SIO1)
  9. DPR (SIO2)
 10. DPR (SIO3)
 11. DPR (AND)
 12. MAIN FLASH
 13. FONT FLASH
  Q. Quit

Select Memory = >
```

Names of ICs on the CPU-263 board corresponding to each item of the “Memory test” display on the front page are shown below.

Item	IC
0. RAM	IC43 - 50
1. DEBUG RAM	For factory
2. BACKUP RAM	IC39
3. EEPROM	For factory
4. VRAM (M)	IC93, 94
5. VRAM (S)	IC111, 112
6. DPR (SUB)	IC136, 137
7. DPR (SIO0)	IC85
8. DPR (SIO1)	IC80
9. DPR (SIO2)	IC1 (IF-523 board)
10. DPR (SIO3)	IC6 (IF-523 board)
11. DPR (AND)	IC140
12. MAIN FLASH	IC51, 52, 55, 56, 59, 60, 63, 64
13. FONT FLASH	IC103, 104

Note

The ICs of the above test items 2, 3, 12 and 13 are stored the data if turning the power off. But if this test is performed, the memory contents are erased. The memory content of items 2 which are the setup information must be copied to a floppy disk before starting the test, and be down-loaded to the memory ICs after completing the test.

(2) Select a memory and perform the test as follows.
(example) Testing “RAM”
Input the item number “0” and press [RETURN].

```
Select Memory = > 0
```

The memory test is automatically performed and the test result appeared on the terminal display.

```
<<<  RAM CHECK  >>>

1. ADR BUS CHECK ・・・・
        OK
2. R/W DATA CHECK・・・・
                                    0------25-----50-----75-----100
Address =[00A00000 -- 00B00000] ＊＊＊＊＊＊＊＊＊＊＊＊＊＊＊＊＊＊＊＊ OK!

        Hit any key !
```

(3) Checking the test result
“OK” appears on each item of the selected memory test.

(example) “RAM” Test
“OK” appears on each item of “RAM CHECK” display.

(4) Exiting each item of memory test
Press any terminal button to return to the “Memory test” display.
(5) Exiting the “Memory test”
Input “Q” on the “Memory test” display and press [RETURN].
The display returns to the “H/W Tester on CPU-263” menu.

```
Select Memory = > Q
```

2. PIO test

(1) After starting the self diagnostics mode in the section 3-6-3, input the menu item number “2” on the “H/W Tester on CPU-263” menu and press [RETURN].

```
H/W Test = > 2
```

Terminal display changed to the following “PIO test” display.

```
<<< PIO test >>>

 0. Read
 1. Write
 Q. Quit

   Input test No. >
```

(2) Selecting and testing the “Read” test from the “PIO test”
Input the item number “0” on the “PIO test” display and press [RETURN].

```
Input test No. > 0
```

The read test is automatically performed and the test result appears on the terminal display.

```
    <<< PIO DATA READ >>>
1.  STATUS   [PIO-1.reg B]
    SIO0  : L  , SIO1  : L  , SIO2  : L  , SIO3  : L
    FIELD  :H  , FLDCNT :H  , CENTRO : L , VDSNS  : L
2.  GPI IN     [PIO-1.reg C]
    0: H    1: H    2: H    3: H    4: H    5: H    6: H    7: H
3.  DIP  SW   [PIO-1.reg D]
    1: ON   2: OFF  3: OFF  4: OFF  5: OFF  6: OFF  7: OFF  8: OFF
3.  ERROR    [PIO-1.reg E]
    UNIT A : H (*1)    UNIT B :H (*1)

      Type any key !
```

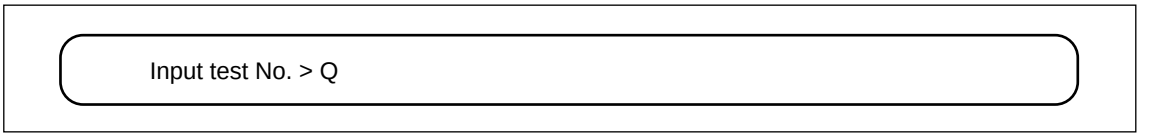
(∗1) H : The power supply is normal, or the power supply unit is not installed.
L : The power supply is abnormal. (The power supply unit is faulty, the power supply fan is stopped, or the output voltage is greatly different from the set value.)

(3) Checking the test result
Check every test item of the “PIO data read”.
(a) “1. STATUS [PIO-1 reg B]” is the adjustment item at the factory.
(b) “2. DIP SW [PIO-1 reg D]”
The switches 1, 3 and 4 of the DIP switch (S4) on the CPU-263 board must be selected to “ON” and the other switches must be selected to “OFF”.

(4) “1. Write” is the adjustment item at the factory

(5) Ending the “Read test”
Press your required terminal button to return to the “PIO test” display.

(6) Ending the “PIO test”
Input “Q” on the “PIO test” display and press RETURN.
The display returns to the “H/W Tester on CPU-263” menu.



3. GPI test

(1) Connect the test tool for the GPI connector described in the section 3-6-1 to the GPI D-SUB 25-pin connector on the connector panel.

(2) After starting the self diagnostics mode in the section 3-6-3, input the menu item number “3” on the “H/W Tester on CPU-263” menu and press RETURN.

```
H/W Test = > 3
```

The GPI test is automatically performed and the test result appears on the terminal display.

```
<<< GPI TEST >>>

bit 0 on    :  OK !
bit 0 off   :  OK !  ・ ・ ・ (0.005 msec) (*1)
bit 1 on    :  OK !
bit 1 off   :  OK !  ・ ・ ・ (0.005 msec)
bit 2 on    :  OK !
bit 2 off   :  OK !  ・ ・ ・ (0.005 msec)
bit 3 on    :  OK !
bit 3 off   :  OK !  ・ ・ ・ (0.005 msec)
bit 4 on    :  OK !
bit 4 off   :  OK !  ・ ・ ・ (0.005 msec)
bit 5 on    :  OK !
bit 5 off   :  OK !  ・ ・ ・ (0.005 msec)
bit 6 on    :  OK !
bit 6 off   :  OK !  ・ ・ ・ (0.006 msec)
bit 7 on    :  OK !
bit 7 off   :  OK !  ・ ・ ・ (0.005 msec)

status - > OK (*2)

Hit any key !
```

(∗1) (0.005 mseconds) : This is the adjustment data at the factory
(∗2) status ->OK : The GPI interface is normal
status ->NG : The GPI interface is abnormal

(3) Checking the test result
Check that the GPI interface is normal.

(4) Ending the “GPI test”
Press your required terminal button to return to the “H/W Tester on CPU-263” menu.

(5) Disconnect the test tool for the GPI connector.

4. FDC test

(1) After starting the self diagnostics mode in the section 3-6-3, input the menu item number “4” on the “H/W Tester on CPU-263” menu and press [RETURN].

```
H/W Test = > 4
```

Terminal display changes to the following “Floppy Disk drive/Controller (FDC)” display.

```
<<<  Floppy Disk drive/Controller test  >>>

  0.  Directory
  1.  Write protect
  2.  Seek              – – –  use formated disk
  3.  Read & Write      – – –  use formated disk
  4.  Format
  Q.  Exit

        Input test No. >
```

(2) Select an item from the “FDC test” and perform the test as follows.

(example) Testing “Directory”
Input the item number “0” on the “FDC test” display and press [RETURN].

```
Input test No. > 0
```

The item “0” of the “FDC test” is automatically performed and the file names of the disk which is currently inserted in the FDD are displayed as shown below.

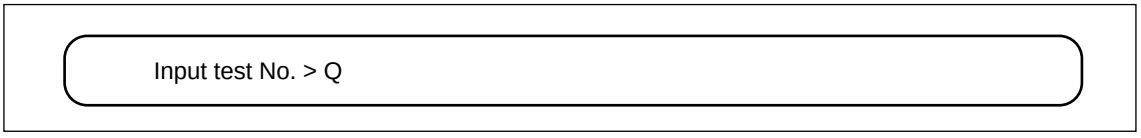
```
<<  Directory test  – – –  Start  >>

a – rw   330833    '95 – 06 – 19   13 : 53   BKDS7010.WLZ
a – rw    68954    '95 – 06 – 19   13 : 56   FONT.WLZ
a – rw    11913    '95 – 06 – 19   14 : 02   SUB.WLZ

        Hit any key !
```

(3) Checking the test result
Check the following items on each test item of the “FDC test”.
(a) “0. Directory”
This test checks that the file names of the floppy disk which is currently inserted in the FDD.
(b) “1. Write protect”
This test checks that the write-protect status of the floppy disk.
(c) “2. Seek”
Check that “OK” appears on the “Seek” operation.
(d) “3. Read & Write”
Check that “OK” appears on the read and write operation of the FDD.
(e) “4. Format”
Check that “OK” appears on the formatting operation of the FDD.

Note

- Items “2. Seek” and “3. Read & Write” of the “FDC test” menu require a formatted floppy disk.
- Items “3. Read & Write” and “4. Format” of the “FDC test” menu damage to the stored contents of floppy disk.

(4) Ending the test of the items of the FDC
Press your required terminal button to return to the “FDC test” display.
(5) Ending the “FDC test”
Input “Q” on the “FDC test” display and press RETURN.
The display returns to the “H/W Tester on CPU-263” menu.



5. Timer & Interrupt test

This item tests the built-in timer and interrupt controller (IC76) on the CPU-263 board and is checks their function correctly.

Note

This test requires DVS-7200A.

(1) Connect the “PANEL 1” connector (D-SUB 9-pin) on the rear panel of the DVS-7200A to the “SWITCHER” connector (D-SUB 9-pin) on the connector panel of this unit.
(2) After starting the self diagnostics mode in the section 3-6-3, input the menu item number “5” on the “H/W Tester on CPU-263” menu and press [RETURN].

```
H/W Test = > 5
```

The Timer & Interrupt test is automatically performed and the test result appeared on the terminal display.

```
<<<  TIMER & INTERRUPT TEST  >>>

1.  TIMER 0 & INT   : OK ! *1)
2.  TIMER 1 & INT   : OK ! (*1)
3.  TIMER 2 & INT   : OK ! (*1)
4.  VD INT          : OK ! (*1)

    Hit any key to quit !
```

(∗1) OK ! : Normal

(3) Checking the test result
Check that “OK” appears on each item of the Timer & and Interrupt test.
(4) Exiting the “Timer & and Interrupt test”
Press your required terminal button to return to the “H/W Tester on CPU-263” menu.

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6. EL panel test

(1) After starting the self diagnostics mode in the section 3-6-3, input the menu item number “6” on the “H/W Tester on CPU-263” menu and press RETURN.

```
H/W Test = > 6
```

Terminal display changes to the following “EL test”.

```
<<<  EL test >>>

 1.  Main screen crosshatch test.
         Hit any key !
 2.  Main screen character test.
         Hit any key !
 3.  Main screen scroll test.
         Hit any key !
 4.  Main screen reverse test.
         Hit any key !
 5.  Main screen blink test.
         Hit any key !
 6.  Sub screen crosshatch test.
         Hit any key !
 7.  Sub screen character test.
         Hit any key !
 8.  Sub screen scroll test.
         Hit any key !
 9.  Sub screen over test.
         Hit any key !
10.  Sub screen OR test.
         Hit any key !
11.  All clear.
         Hit any key !
12.  All light.
         Hit any key !
13.  EL disable test.
         Hit any key !
```

(2) Selecting a menu item from the “EL test” and executing the test
Press your required button on the terminal. Content of the item 1 of the “EL test” menu appears on the EL display of this unit. Every pressing of your required button on the terminal, the item of the “EL test” is performed.

(3) Checking the test result

Check the followings on each item of the “EL test”.

- The character font of the main screen uses the flash memory.
- The character font of the sub screen uses the ROM.

(a) “1. Main screen crosshatch test”

Check that the vertical and horizontal lines of the crosshatch pattern do not bend or disappear.

Note

If there is any non-programmed memory, all elements of the EL display light.

(b) “2. Main screen character test”

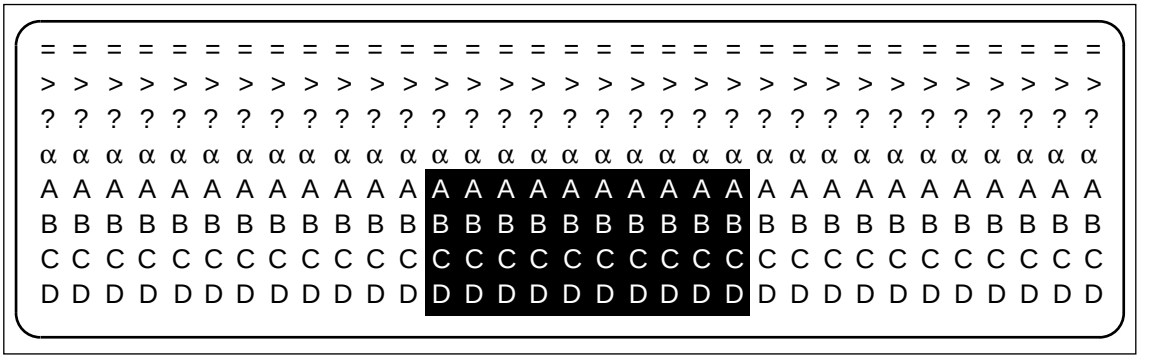
Check that the alphanumeric characters are indicated.

(c) “3. Main screen scroll test”

Check that the alphanumeric character display of the item (b) scrolls in the vertical direction.

(d) “4. Main screen reverse test”

Check that the alphanumeric character display of the item (b) is partially highlighted in blocks.



(e) “5. Main screen blink test”

Check that the partially highlighted portions of the item (d) blink.

(f) “6. Sub screen crosshatch test”

Check that the vertical and horizontal lines of the crosshatch pattern do not bend or disappear.

(g) “7. Sub screen character test”

Check that the alphanumeric characters are indicated.

(h) “8. Sub screen scroll test”

Check that the alphanumeric character display of the item (g) scrolls in the vertical direction.

(i) “9. Sub screen over test”

Check that the alphanumeric characters “S” are displayed in the alphanumeric characters “M” in blocks shape.

(j) “10. Sub screen OR test”

Check that the alphanumeric characters “S” are displayed on the half-tone background.

(k) “11. All clear”

Check that all elements of the EL display light off.

(l) “12. All light”

Check that all elements of the EL display light.

(m) “13. EL disable test”

Check that all elements of the EL display light off.

(4) Ending the “EL test”

Press your required button on the terminal and the display returns to the “H/W Tester on CPU-263” menu.

7. AND test

This menu tests the alphanumeric display.

(1) After starting the self diagnostics mode in the section 3-6-3, input the menu item number “7” on the “H/W Tester on CPU-263” menu and press RETURN.

```
H/W Test = > 7
```

The terminal screen changes to the following “AND test” display.

```
<<<  AND test  >>>

1. Fill AND MEMORY with W.
        Hit any key !

2. Fill AND MEMORY with M.
        Hit any key !

3. Fill AND MEMORY with BLANK.
        Hit any key !

4. Fill AND MEMORY with FULL.
        Hit any key !

5. Lum level = 3
        Hit any key !

6. Lum level = 2
        Hit any key !

7. Lum level = 1
        Hit any key !

8. Lum level = 0
        Hit any key !
```

(2) Selecting a menu item from the “AND test” and executing the test
Press your required button on the terminal. The “AND test” item 1 is performed. Press your required button on the terminal. The “AND test” item 2 is performed. All contents of the test items appear on the alphanumeric display.

(3) Checking the test result

Check the followings on each item of the “AND test”.

(a) “1. Fill AND MEMORY with W.”
Check that all alphanumeric displays are filled with the letter “W”.

(b) “2. Fill AND MEMORY with M.”
Check that all alphanumeric displays are filled with the letter “M”.

(c) “3. Fill AND MEMORY with BLANK.”
Check that all alphanumeric displays light off.

(d) “4. Fill AND MEMORY with FULL.”
Check that all dots of all alphanumeric displays light up.

(e) “5. Lum level = 3”
Check that it is possible to adjust the brightness level 3 model (the 1st brightness).

(f) “6. Lum level = 2”
Check that it is possible to adjust the brightness level 2 model (the 2nd brightness).

(g) “7. Lum level = 1”
Check that it is possible to adjust the brightness level 1 model (the 2nd darkness).

(h) “8. Lum level = 0”
Check that it is possible to adjust the brightness level 2 model (the 1st darkness).

(4) Ending the “And test”

Press your required terminal button to return to the “H/W Tester on CPU-263” menu.

8. Communication test

(1) Connect the four tool cables for testing the RS-422A communication system and the tool cable for testing the RS-232C communication system in the section 3-6-1 to the following D-SUB 9-pin connectors.

(a) Tool cables for testing the RS-422A communication system
Between “SWITCHER” and “DSK” connectors
Between “DME” and “REMOTE 1” connectors
Between “REMOTE 2” and “REMOTE 3” connectors
Between “REMOTE 4” and “REMOTE 5” connectors

(b) Tool cables for testing the RS-232C communication system
Between “TERMINAL 1” and “TERMINAL 2” connectors

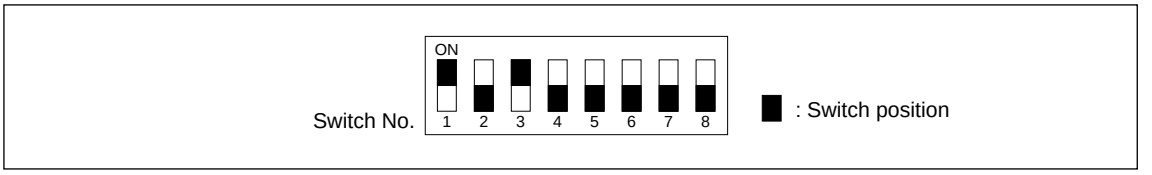
Checking the IF-523 board

The IF-523 board needs for the items (c), (d), (h) and (i) in the step (9).

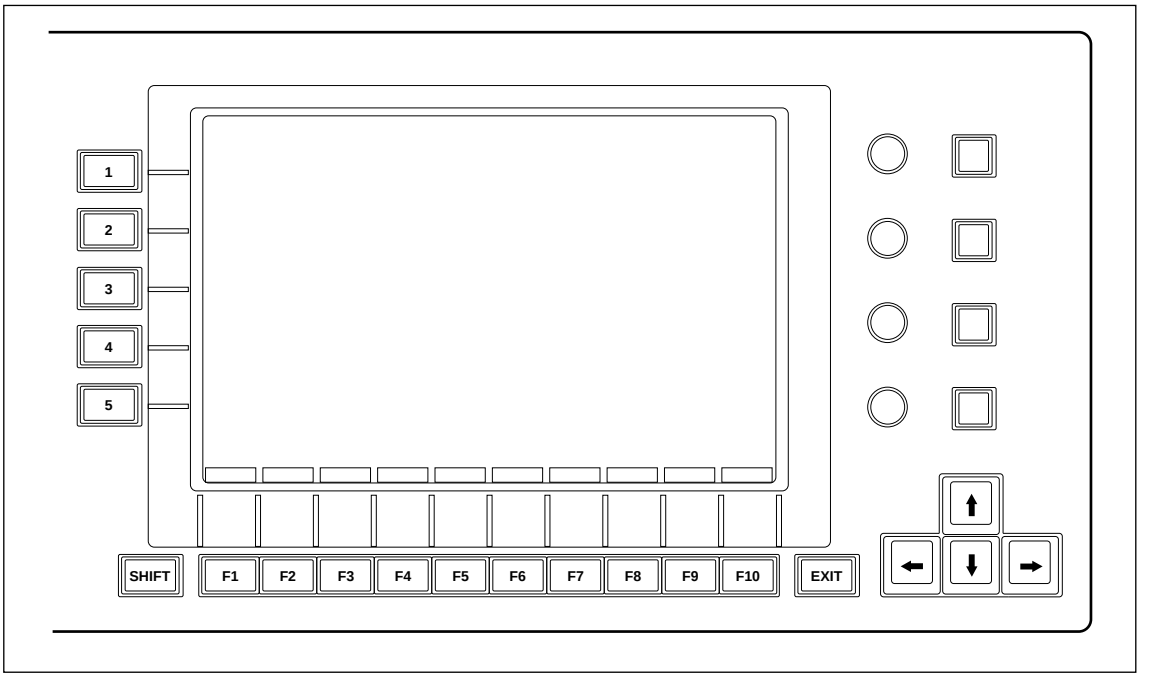
Note

The tool cable for testing the RS-232C communication system is connected between “TERMINAL 1” and “TERMINAL 2” connectors in this test. Therefore, the terminal with connector for the test cannot be used. Perform this test in the following procedures.

(2) Open the panel. (Refer to the section 1-2-1.)
(3) Turn off the power switch in the control panel.
(4) Set the DIP switch (S4) on the CPU-263 board as shown below.
(5) Turn on the power switch in the control panel.
(6) Close the panel. (Refer to the section 1-2-1.)



(7) Press the [1] button on the display panel of this unit. The “H/W Tester on CPU-263” menu appears on the EL display. The buttons peripheral the EL display are shown below.



(8) Selecting “Communication test” menu item and executing the test
Press [F 8] on the display panel and input “8” on the “H/W Tester on CPU-263” menu display and press the [E X I T] button on the display panel.

Notes

- Press [F 1] through [F 1 0] button on the display for inputting a number. The buttons [F 1] through [F 1 0] correspond to the numbers 1 through 0.
- The [E X I T] button has the function of the [R E T U R N] button.

```
H/W Test = > 8
```

The communication test is automatically performed and the test result is shown on the EL display as follows.

```
<<<  COMMUNICATION TEST  >>>

  Reset sio0                        : OK
  Reset sio1                        : OK
  Reset sio2                        : OK
  Reset sio3                        : OK
  Reset sio4 (sub cpu)              : OK

  sio0 ch0 [controlling] <-> ch1 [controlled]      : OK
  sio0 ch1 [controlling] <-> ch0 [controlled]      : OK

  sio1 ch0 [controlling] <-> ch1 [controlled]      : OK
  sio1 ch1 [controlling] <-> ch0 [controlled]      : OK

  sio2 ch0 [controlling] <-> ch1 [controlled]      : OK
  sio2 ch1 [controlling] <-> ch0 [controlled]      : OK

  sio3 ch0 [controlling] <-> ch1 [controlled]      : OK
  sio3 ch1 [controlling] <-> ch0 [controlled]      : OK

  sio4 ch0 [controlling] <-> ch1 [controlled]      : OK
  sio4 ch1 [controlling] <-> ch0 [controlled]      : OK
```

(9) Checking the test result

Check that “OK” appears on each item of the communication test.

(a) “Reset sio0”
Indicates initialization status of SIO0 (IC86).

(b) “Reset sio1”
Indicates initialization status of SIO1 (IC82).

(c) “Reset sio2”
Indicates initialization status of SIO2 (IC3 on the IF-523 board).

(d) “Reset sio3”
Indicates initialization status of SIO3 (IC7 on the IF-523 board).

(e) “Reset sio4 sub cpu”
Indicates initialization status of sub CPU (IC150).

(f) “sio0 ch0 [controlling] <-> ch1 [controlled]
sio0 ch1 [controlling] <-> ch0 [controlled]”
Indicates communication status between “SWITCHER” and “DSK” connectors.

(g) “sio1 ch0 [controlling] <-> ch1 [controlled]
sio1 ch1 [controlling] <-> ch0 [controlled]”
Indicates communication status between “DME” and “REMOTE 1” connectors.

(h) “sio2 ch0 [controlling] <-> ch1 [controlled]
sio2 ch1 [controlling] <-> ch0 [controlled]”
Indicates communication status between “REMOTE 2” and “REMOTE 3” connectors.

(i) “sio3 ch0 [controlling] <-> ch1 [controlled]
sio3 ch1 [controlling] <-> ch0 [controlled]”
Indicates communication status between “REMOTE 4” and “REMOTE 5” connectors.

(j) “sio4 ch0 [controlling] <-> ch1 [controlled]
sio4 ch1 [controlling] <-> ch0 [controlled]”
Indicates communication status between “TERMINAL 1” and “TERMINAL 2” connectors.

(10) Terminating the “Communication test”

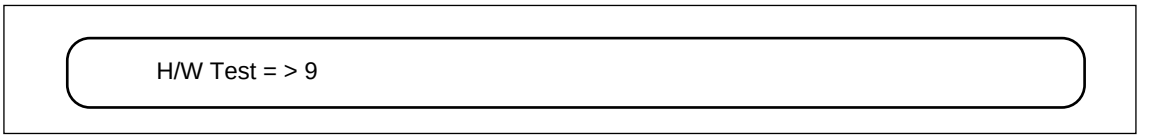
Press the [EXIT] button on the EL panel to return to the “H/W Tester on CPU-263” menu.

(11) Remove all tool cables for communication tests from the connector panel and connect the terminal with connector for test to the “TERMINAL 1” connector. (Refer to the section 3-6-2.)

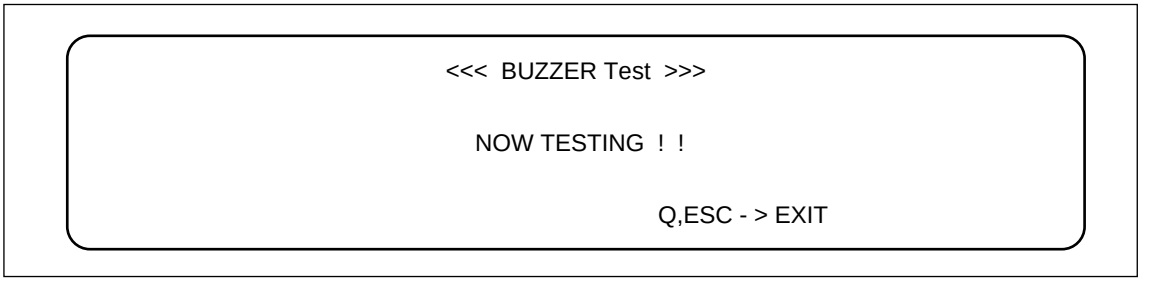
9. Buzzer test

Checks that the buzzer sounds.

(1) After starting the self diagnostics mode in the section 3-6-3, input the menu item number “9” on the “H/W Tester on CPU-263” menu and press [RETURN].



The terminal screen changes to the following display and buzzer sounds intermittently.



(2) Checking the test result
Check that buzzer sounds intermittently.

(3) Ending the “Buzzer test”
Press “Q” or “ESC” button on the terminal to return to the “H/W Tester on CPU-263” menu.

10. SUB CPU test

The sub CPU is controled the lighting of the LEDs and is read the switch data and volume control data.
This step is described about only the “SUB CPU test” for the KY-318 through 324 boards.

(1) After starting the self diagnostics mode in the section 3-6-3, input the menu item number “10” on the “H/W Tester on CPU-263” menu and press [RETURN].

```
H/W Test = > 10
```

The terminal screen changes to the following “SUB CPU test” display.

```
<<<<<<<<<<  SUB CPU Test  >>>>>>>>>>
    – – – – – Test Menu – – – – –
    1  : SW SCAN Test
    2  : LED LIGHTING Test
    3  : 7SEG LED Test
    4  : FADER & JOY STICK Test
    5  : VOLUME KNOB Test
    6  : LED BRIGHTNESS Test
    Q : Exit

        Input Test No ! (1-6) or  Q"
```

(2) Select a menu item from the “SUB CPU test” and execute the test.

(example) Testing “1 : SW SCAN test”
Press “1” on the terminal.
The “1 : SW SCAN test” is automatically performed.

(3) Checking the test result
Check the followings on each test item.
(a) “1 : SW SCAN test”
Press the button on the control panel and check that the pressed button lights.
For the two-color lighting buttons, press the button again and check that the second color lights.
(b) “2 : LED lighting test”
Check that all buttons on the control panel light each block and each board.
(c) “3 : 7-SEG LED test”
Check that all elements for the numeric display 7-segment LED on the control panel light.
(d) “4 : Fader & Joy stick test”
Check that the present value of the fader lever and the joy stick is displayed on the EL display.
(d) “5 : Volume knob test”
Check that the present value of the volume knob is displayed on the EL display.
(f) “6 : LED brightness test”
Check that the brightness and the color of the buttons in each block on the control panel are not vary.
(4) Ending the “Buzzer test”
Press “Q” button on the terminal to return to the “H/W Tester on CPU-263” menu.

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11. MISC test

This is the adjustment item at the factory.

3-6-5. Ending the Self Diagnostics Mode

(1) Open the panel. (Refer to the section 1-2-1.)
(2) Turn off the power switch in the control panel.
(3) Select all switches of the DIP switch (S4) on the CPU-263 board to off. (Operation mode)
(4) Turn on the power switch in the control panel.
(5) Close the panel. (Refer to the section 1-2-1.)

Section 4
Periodic Check and Maintenance

4-1. Cleaning

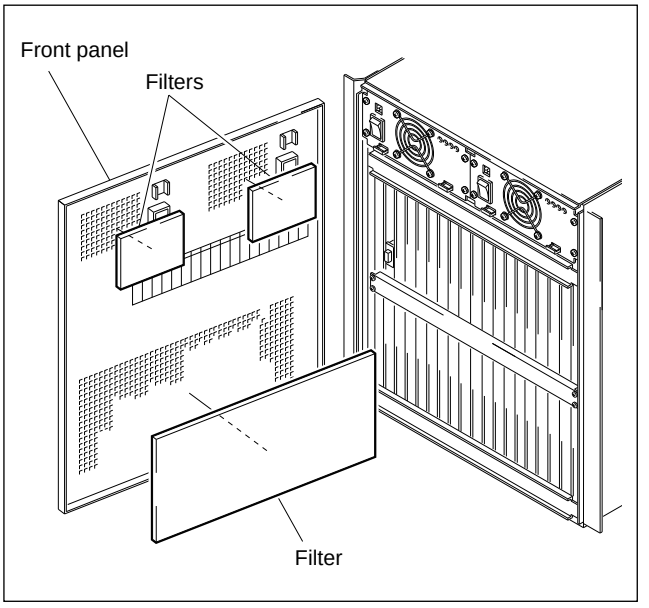
4-1-1. Front Panel

Clean periodically the filter at the back of the front panel because it is apt to catch dust.
It is recommended to replace the filter every five years.

(1) Remove the front panel. (Refer to the section 1-1-1.)
(2) Remove dust on the filter using a vacuum cleaner.

Note

If dust is caught heavily, it is recommended to wash the filter.
When washing the filter, be sure to dry it well.

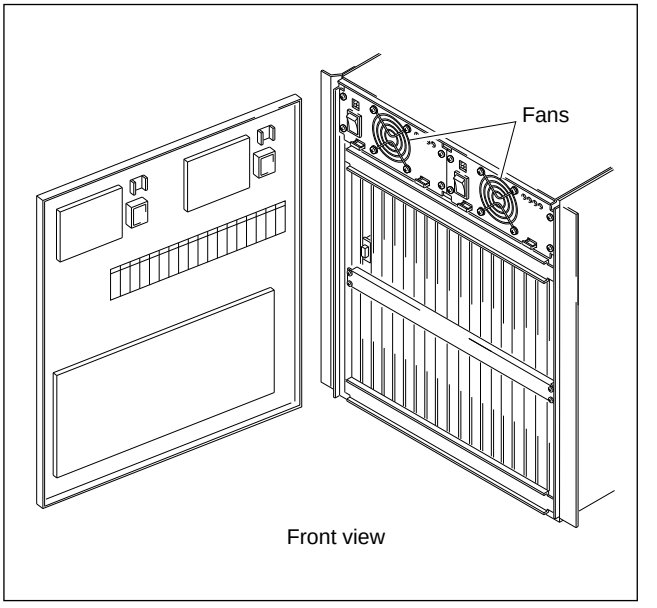


4-1-2. Fans

The temperature in the set increases if dust is attached to the opening block of a fan and the air flow is disturbed. This may badly influence the performance and life of the set.
It is recommended to clean the fans every one month.

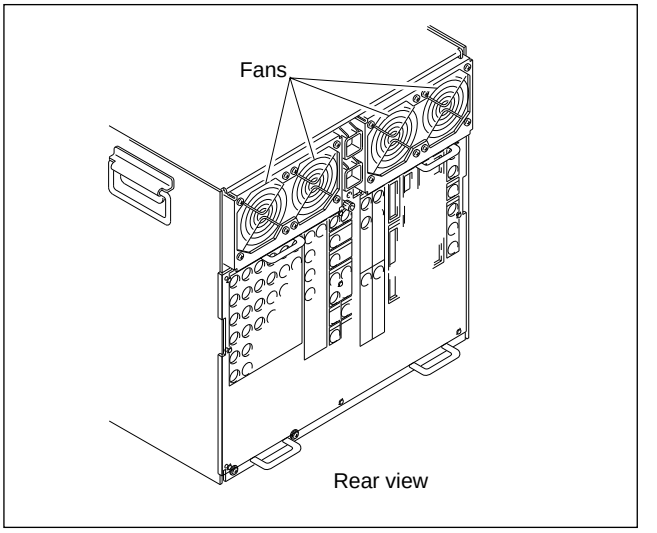
1. Fan of Front side

(1) Remove the front panel. (Refer to the section 1-1-1.)
(2) Remove dust on the fan and the fan guard using a vacuum cleaner.



2. Fan of Rear side

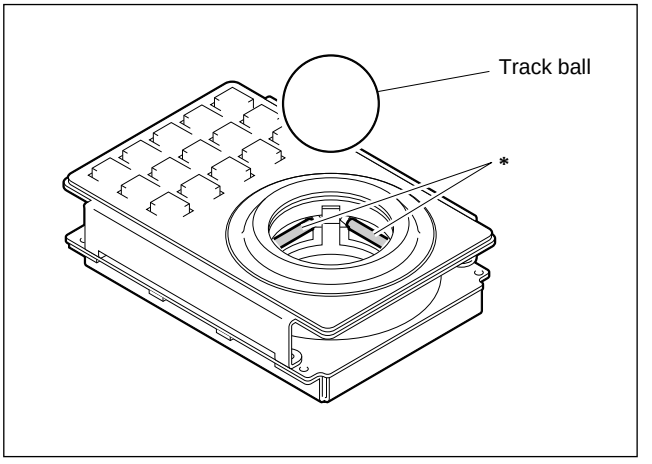
(1) Remove dust on the fan and the fan guard using a vacuum cleaner.



4-1-3. Track Ball (BKDS-7031)

If the track ball of BKDS-7031 has dirt, the display will not operate sometimes when moving the track ball.
It is recommended to clean the track ball every a month.

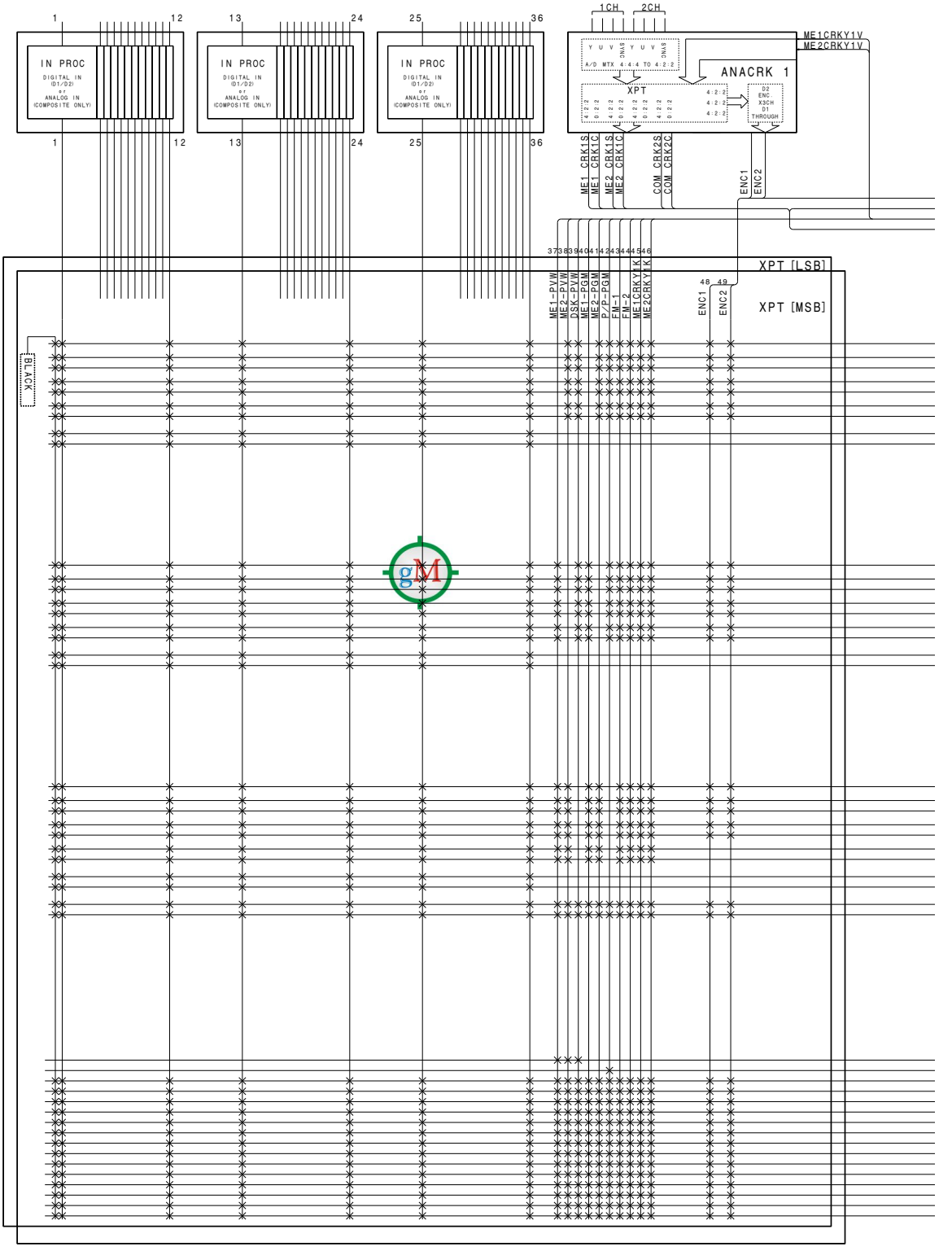
(1) Open the panel. (Refer to the section 1-2-1.)
(2) Turn off the power switch in the control panel. (Refer to the section 1-2-2.)
(3) When cleaning the track ball of BKDS-7031 with installed to the adaptor box (BKDS-7075), remove the two screws and the AD panel. (Refer to “2. Adaptor Box” in the section 1-2-3.)
(4) Turn the ball retainer counterclockwise to release a lock.
(5) Push up the track ball from the hole on the KY-329 board and remove the track ball and ball retainer.
(6) Wipe the track ball and the ∗-marked portions in the figure by a soft cloth or the like.

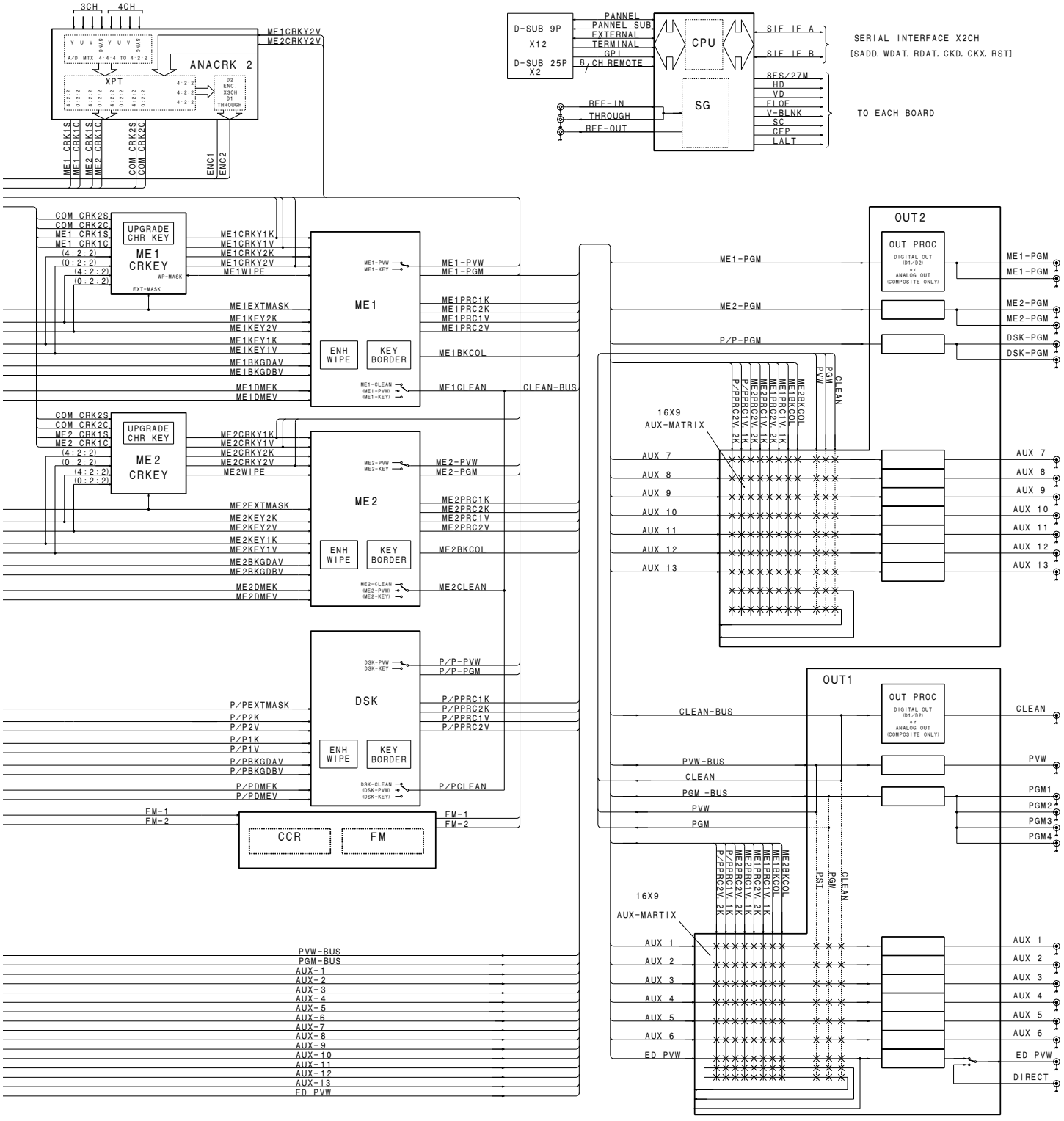


(7) Install the track ball and ball retainer.
(8) Turn the ball retainer clockwise to lock.

Section 5
Overall Block Diagrams

5-1. DVS-7200A (2ME SYSTEM)

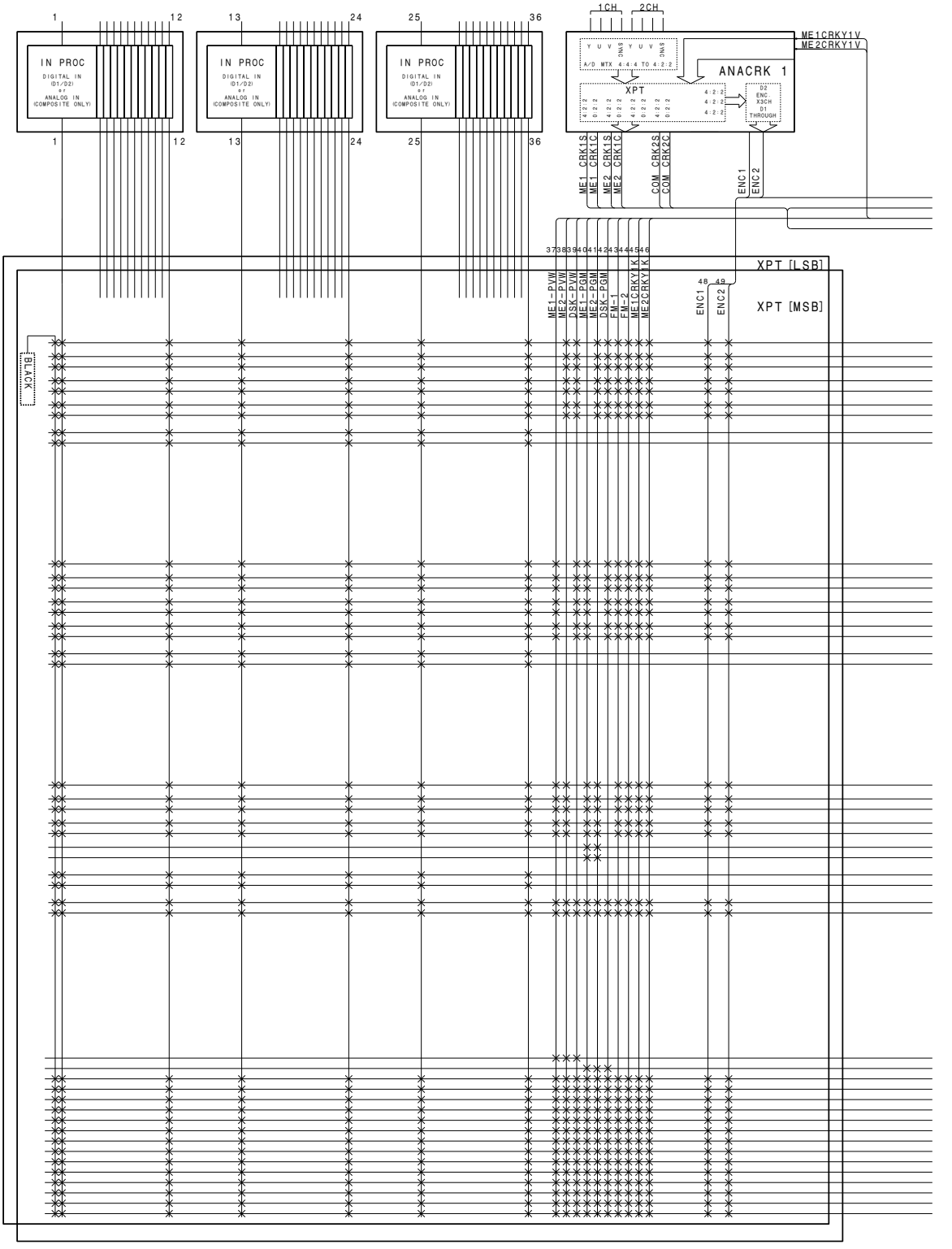


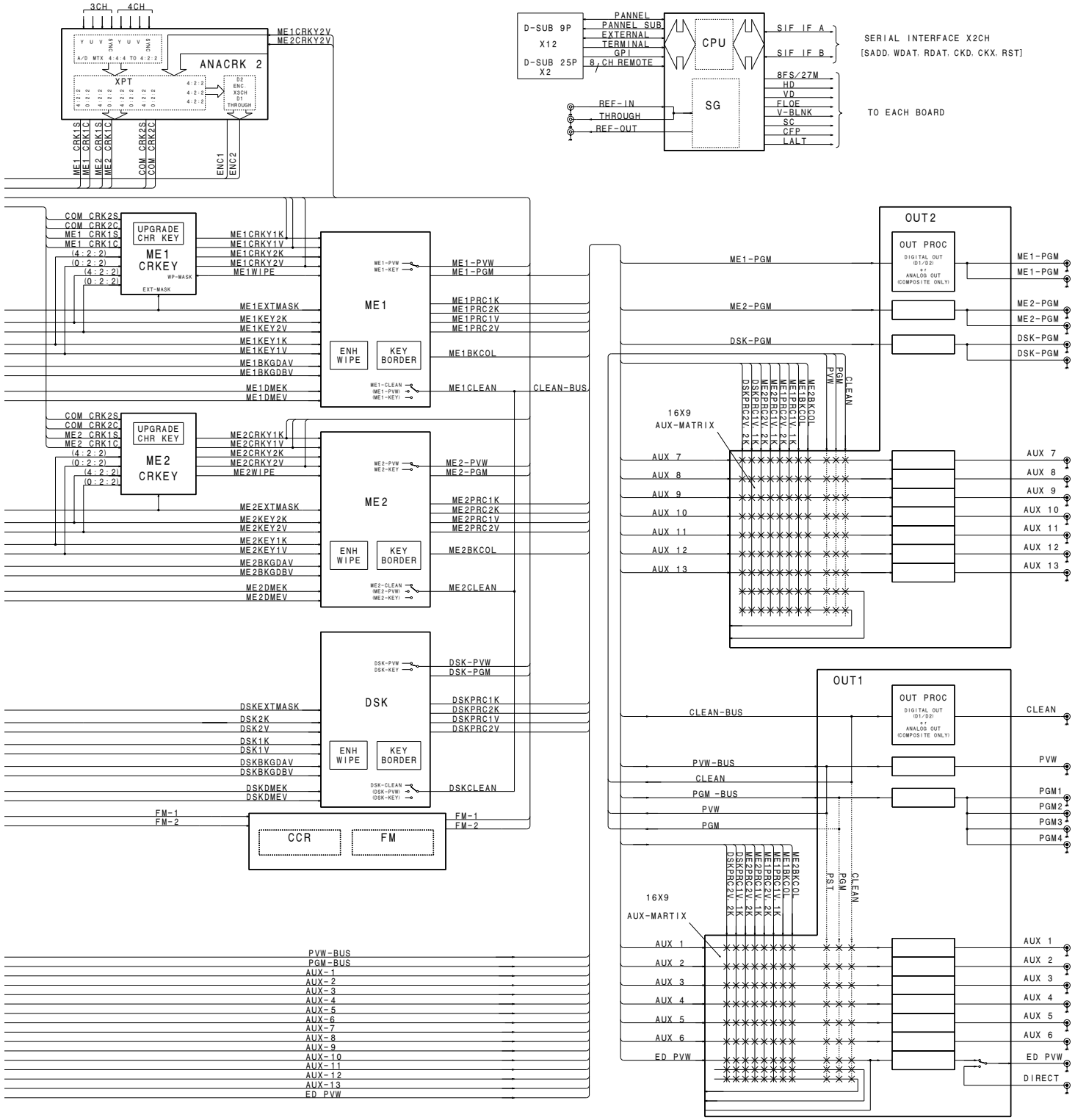


OVERALL BLOCK

DVS-7200A

DVS-7200A (2.5ME SYSTEM)





OVERALL BLOCK

DVS-7200A

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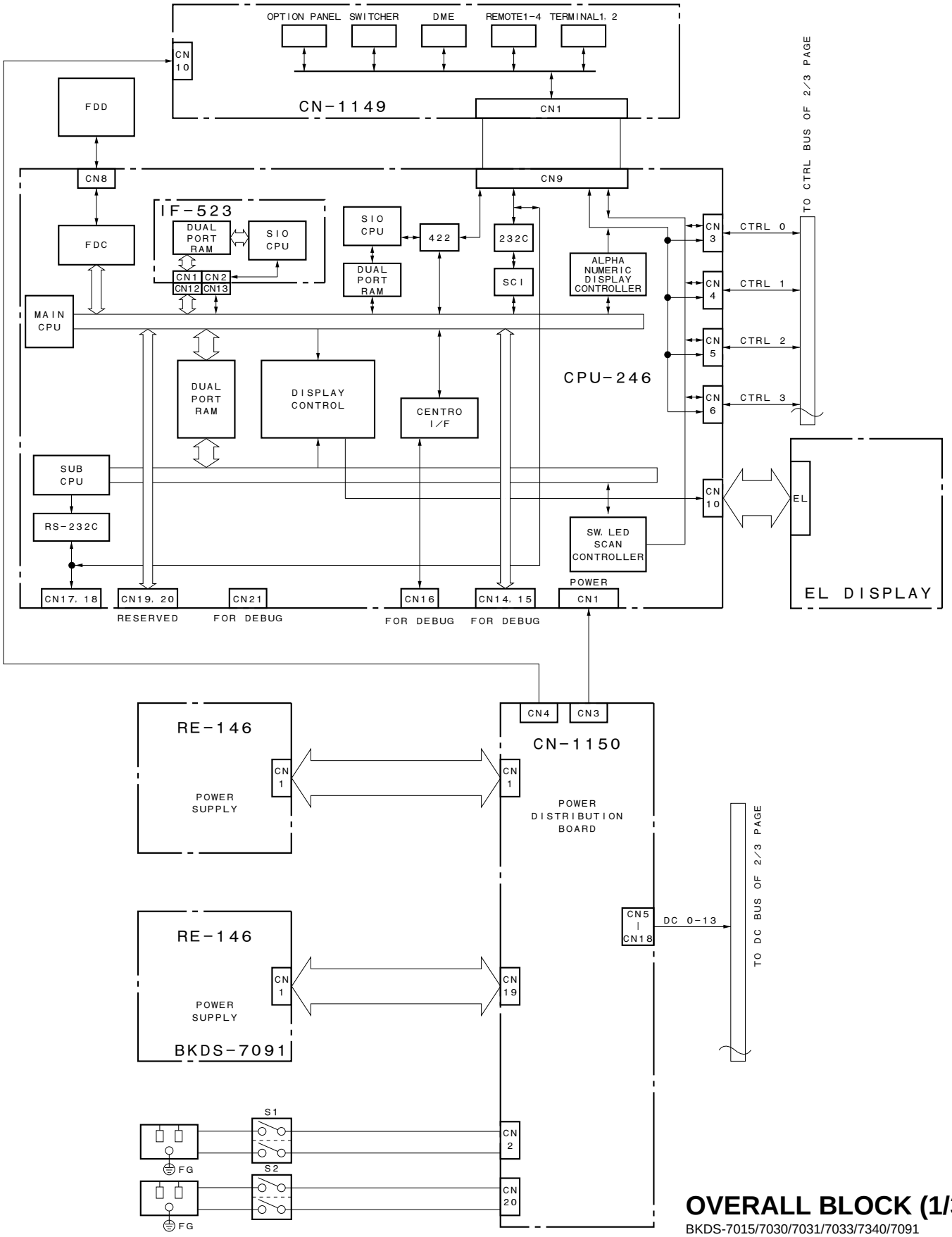
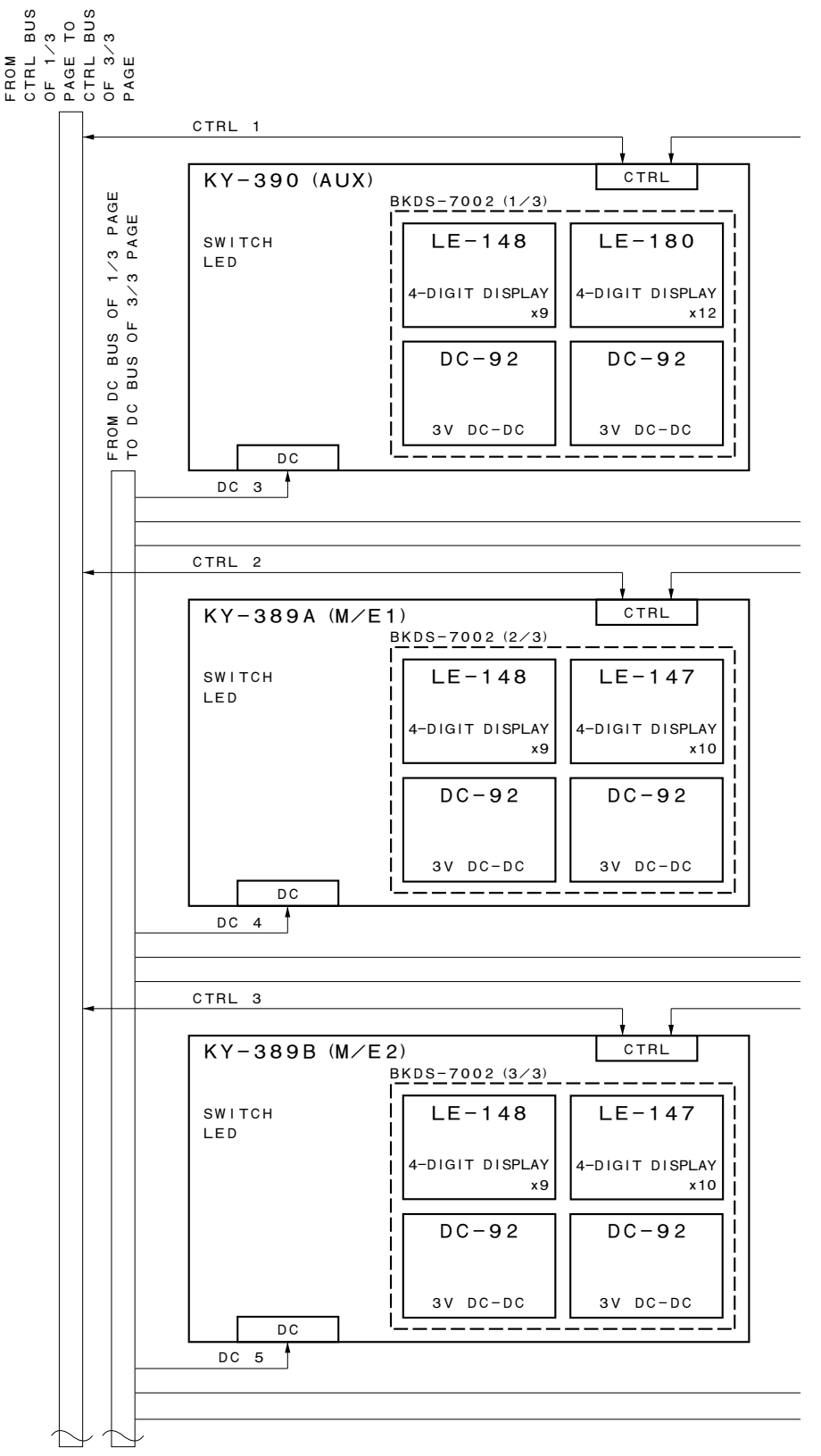
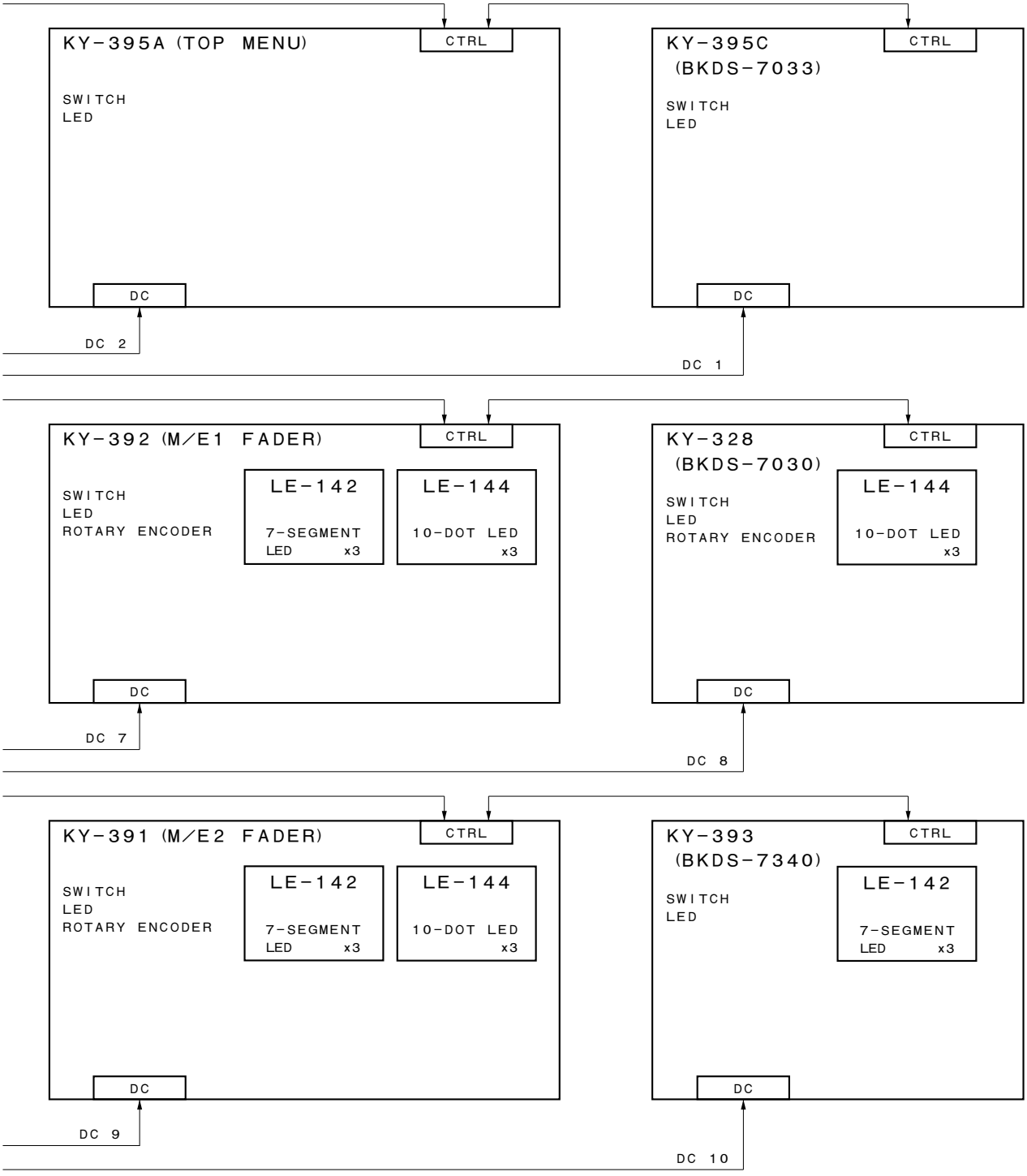
5-2. BKDS-7015



OVERALL BLOCK (1/3)

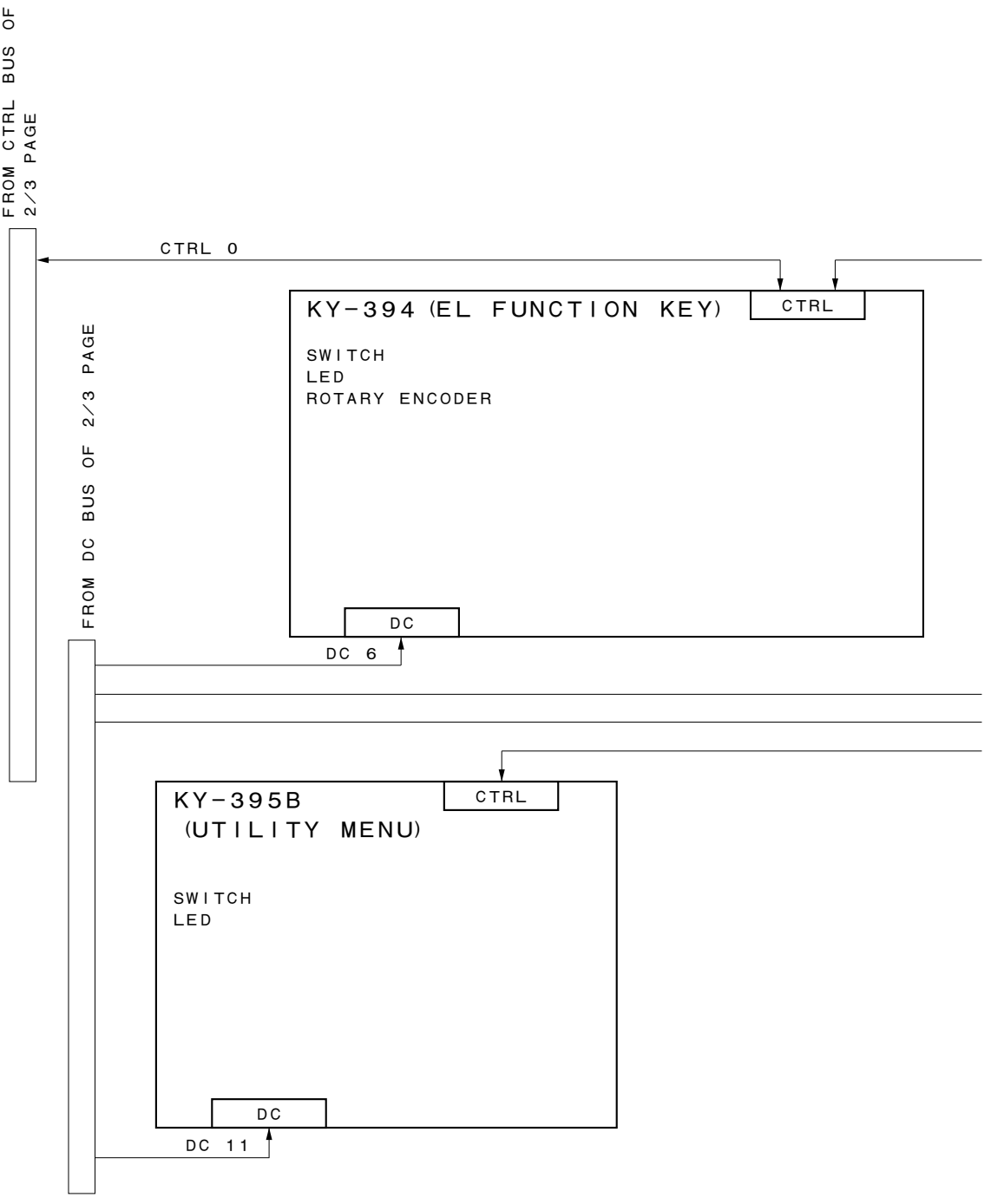
BKDS-7015/7030/7031/7033/7340/7091

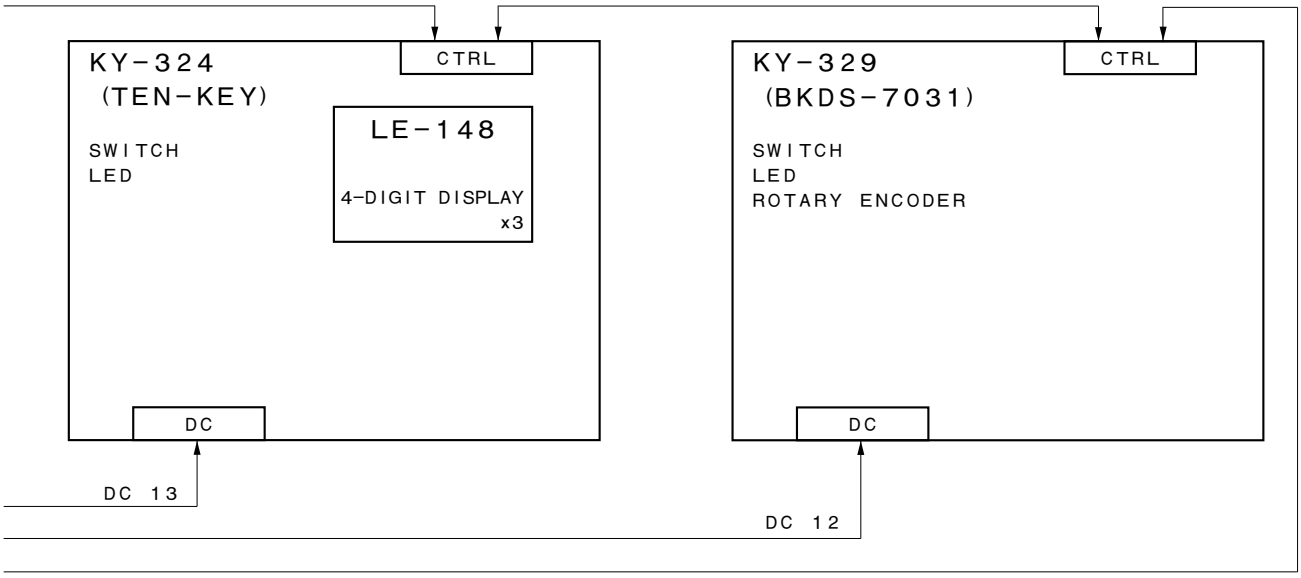

FROM CTRL BUS OF 1/3 PAGE TO CTRL BUS OF 3/3 PAGE
FROM DC BUS OF 1/3 PAGE TO DC BUS OF 3/3 PAGE
CTRL 1
KY-390 (AUX)
CTRL
BKDS-7002 (1/3)
SWITCH
LED
LE-148
4-DIGIT DISPLAY
x9
LE-180
4-DIGIT DISPLAY
x12
DC-92
3V DC-DC
DC-92
3V DC-DC
DC
DC 3
CTRL 2
KY-389A (M/E1)
CTRL
BKDS-7002 (2/3)
SWITCH
LED
LE-148
4-DIGIT DISPLAY
x9
LE-147
4-DIGIT DISPLAY
x10
DC-92
3V DC-DC
DC-92
3V DC-DC
DC
DC 4
CTRL 3
KY-389B (M/E2)
CTRL
BKDS-7002 (3/3)
SWITCH
LED
LE-148
4-DIGIT DISPLAY
x9
LE-147
4-DIGIT DISPLAY
x10
DC-92
3V DC-DC
DC-92
3V DC-DC
DC
DC 5



OVERALL BLOCK (2/3)

BKDS-7015/7030/7031/7033/7340/7091

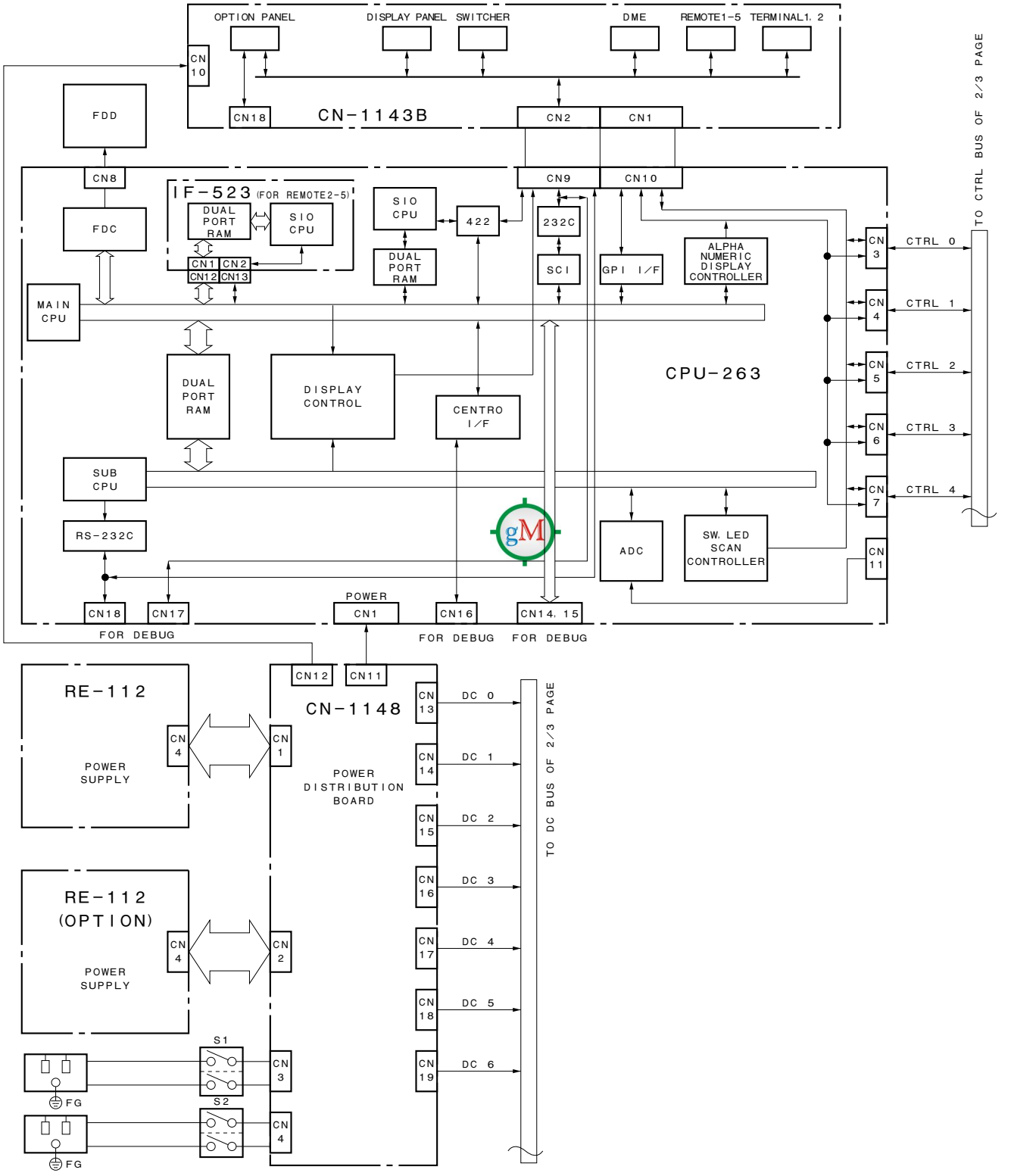

FROM CTRL BUS OF 2/3 PAGE
CTRL 0
KY-394 (EL FUNCTION KEY)
CTRL
SWITCH
LED
ROTARY ENCODER
DC
DC 6
FROM DC BUS OF 2/3 PAGE
KY-395B
(UTILITY MENU)
CTRL
SWITCH
LED
DC
DC 11

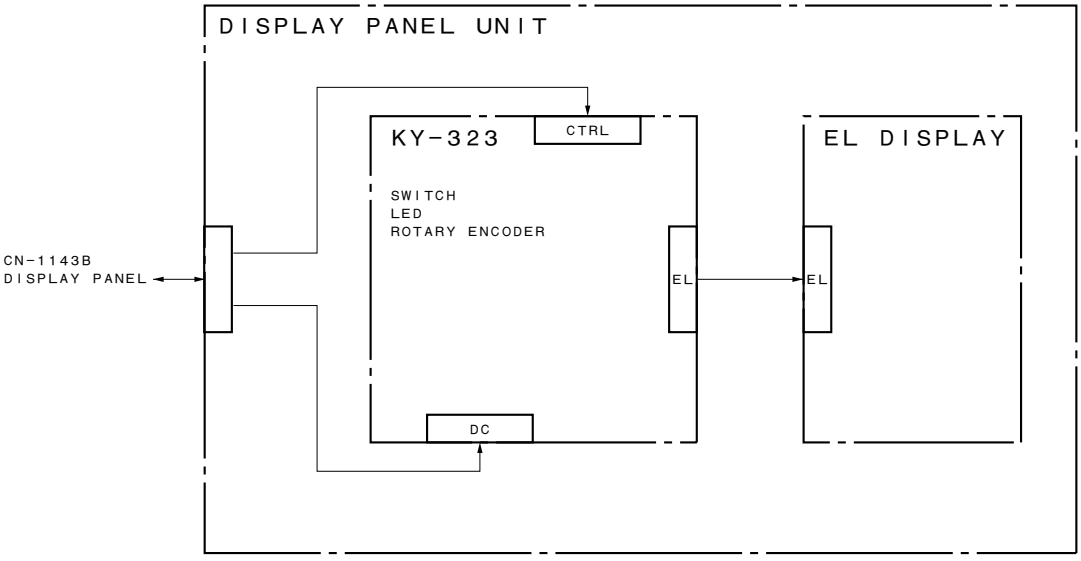


OVERALL BLOCK (3/3)

BKDS-7015/7030/7031/7033/7340/7091

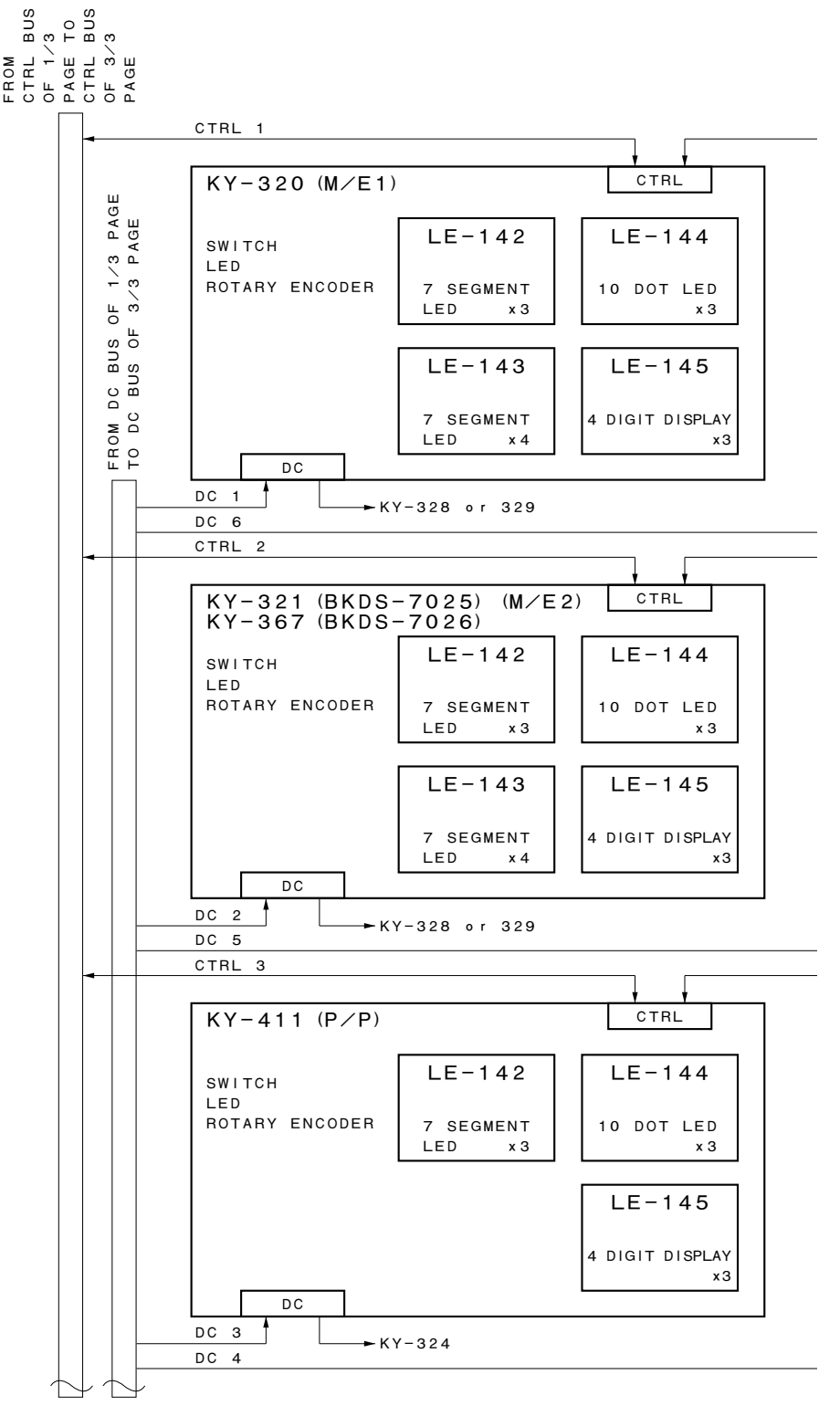
5-3. BKDS-7025/7026

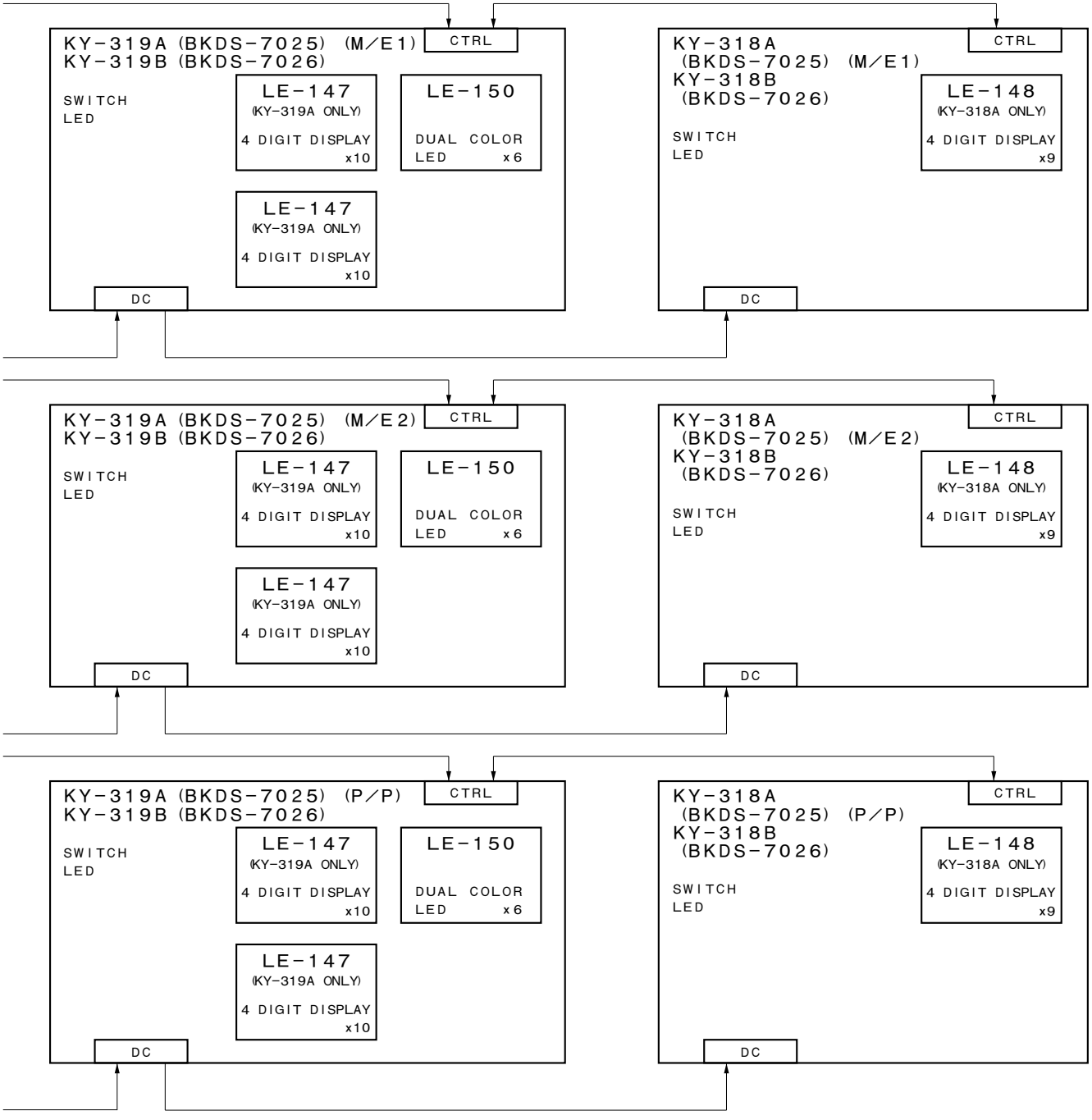




OVERALL BLOCK (1/3)

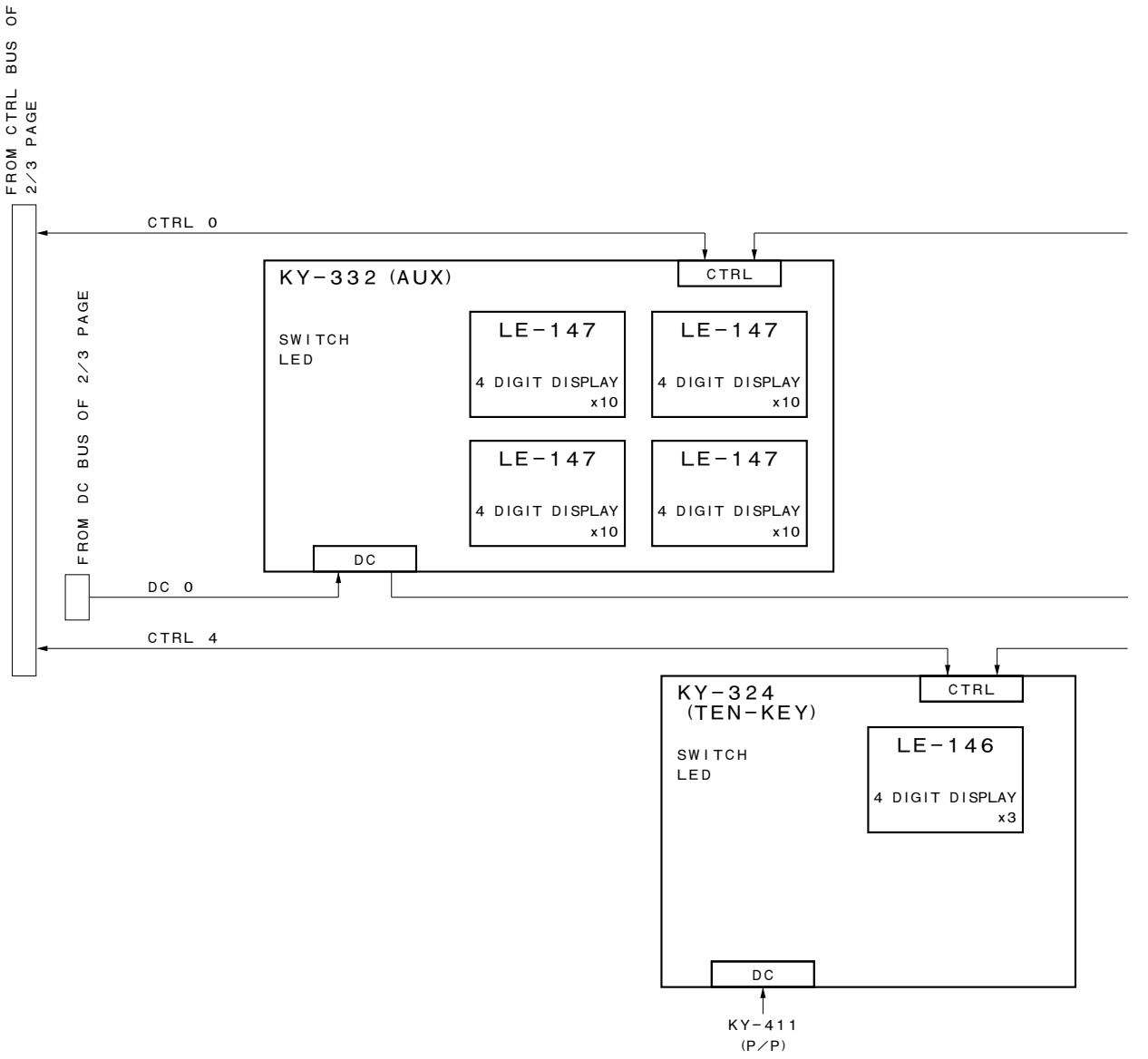
BKDS-7001/7025/7026/7090


FROM CTRL BUS OF 1/3 PAGE TO CTRL BUS OF 3/3 PAGE
FROM DC BUS OF 1/3 PAGE TO DC BUS OF 3/3 PAGE
CTRL 1
KY-320 (M/E1)
CTRL
SWITCH
LED
ROTARY ENCODER
LE-142
7 SEGMENT LED x3
LE-144
10 DOT LED x3
LE-143
7 SEGMENT LED x4
LE-145
4 DIGIT DISPLAY x3
DC
DC 1
DC 6
KY-328 or 329
CTRL 2
KY-321 (BKDS-7025) (M/E2)
KY-367 (BKDS-7026)
CTRL
SWITCH
LED
ROTARY ENCODER
LE-142
7 SEGMENT LED x3
LE-144
10 DOT LED x3
LE-143
7 SEGMENT LED x4
LE-145
4 DIGIT DISPLAY x3
DC
DC 2
DC 5
KY-328 or 329
CTRL 3
KY-411 (P/P)
CTRL
SWITCH
LED
ROTARY ENCODER
LE-142
7 SEGMENT LED x3
LE-144
10 DOT LED x3
LE-145
4 DIGIT DISPLAY x3
DC
DC 3
DC 4
KY-324

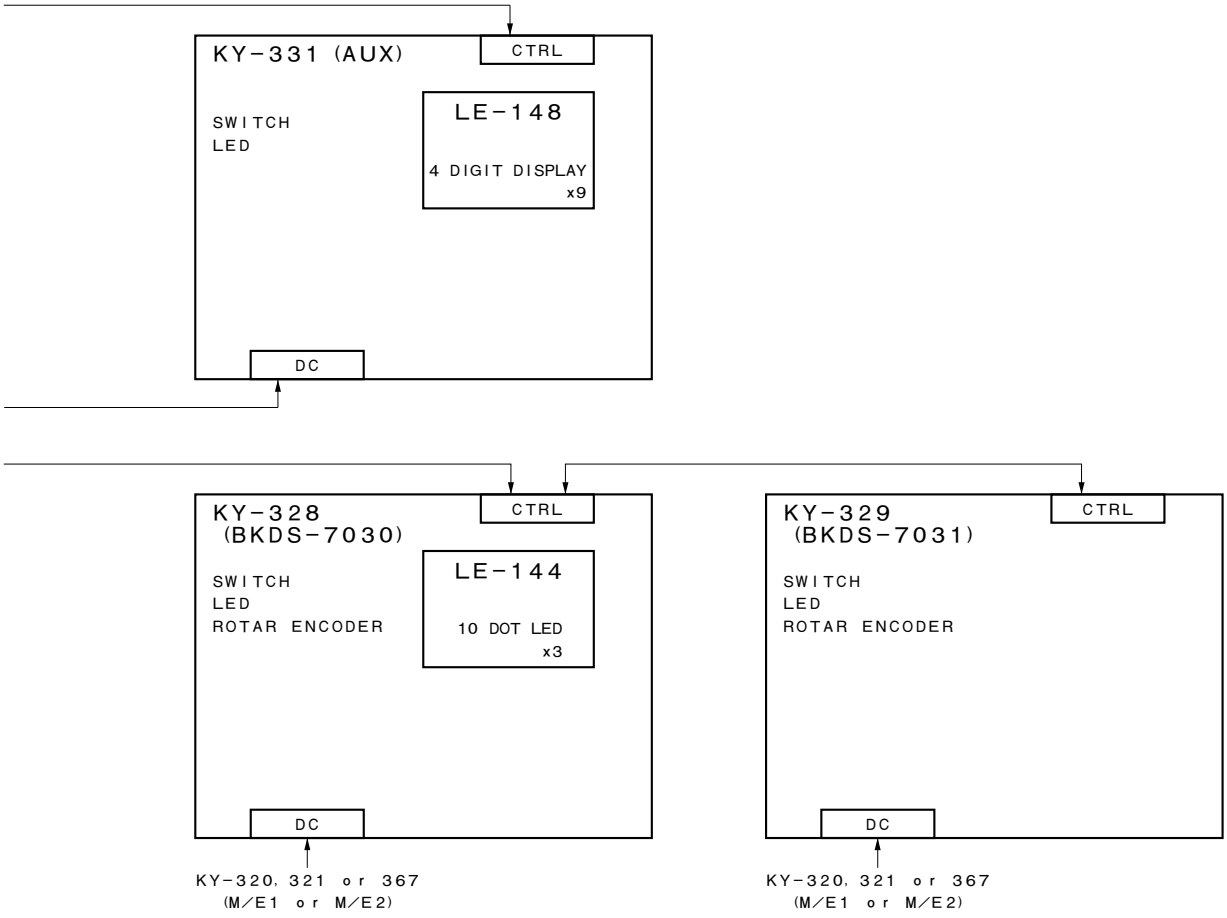


OVERALL BLOCK (2/3)

BKDS-7001/7025/7026/7090


FROM CTRL BUS OF 2/3 PAGE
CTRL 0
KY-332 (AUX)
CTRL
SWITCH
LED
LE-147
4 DIGIT DISPLAY
x10
LE-147
4 DIGIT DISPLAY
x10
LE-147
4 DIGIT DISPLAY
x10
LE-147
4 DIGIT DISPLAY
x10
DC
FROM DC BUS OF 2/3 PAGE
DC 0
CTRL 4
KY-324
(TEN-KEY)
CTRL
SWITCH
LED
LE-146
4 DIGIT DISPLAY
x3
DC
KY-411
(P/P)

http://getMANUAL.com



OVERALL BLOCK (3/3)

BKDS-7001/7025/7026/7090

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SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer :

Check the metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 3.5 mA. Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 5.25 V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 20 V AC range are suitable. (See Fig. A)

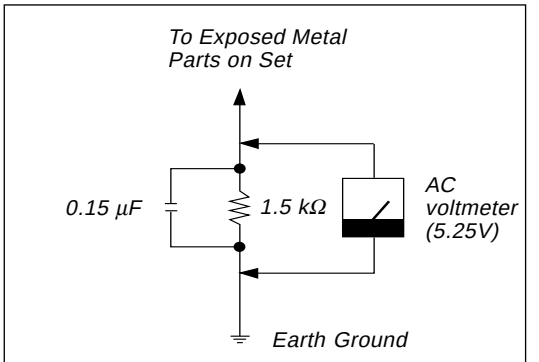

Fig A. Using an AC voltmeter to check AC leakage.

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